Book No.
720 B97B

Accession
252245

SAN FRANCISCO PUBLIC LIBRARY
3 1223 00358 8739

PLATE I: VICENZA

THE SUBSTANCE of ARCHITECTURE

by

A. S. G. BUTLER

A Fellow of the Royal Institute of British Architects

with
a foreword by
SIR EDWIN LUTYENS
R.A.
and
eight illustrations

London
CONSTABLE & CO LTD
1926

720
B97e

252245

ART AND MUSIC DEPARTMENT

Printed in Great Britain by R. & R. Clark, Limited, *Edinburgh.*

TO

HENRY LANCELOT AUBREY-FLETCHER

It is conceivable that the Creator took little heed as to what the Devil might say regarding the world He was by cause and effect creating.

This precedent should be followed by architects, now as of old. They should give no heed as to what the critics may or may not say, but should face their problems with the same sincerity as the sap within a tree creating by its energy a thing alive and beautiful.

After creation, the critics are bound to have their say, backed by the hosts of archæology and flanked by all the powers of literary expression. But, as a tree, so has a design the power within itself. The conditions of purpose, soil and climate—the storm and stress of client and cost—act and re-act to produce what the world, chaired in ease, observes. Mr. Butler's essay gives indispensable help to all those earnest in the desire to reach beyond the clouds of words to the real substance of architecture.

EDWIN L. LUTYENS.

CONTENTS

PAGE

FOREWORD BY SIR EDWIN LUTYENS, R.A. . . vii

INTRODUCTION xiii

CHAPTER ONE

DEFINITION OF ARCHITECTURE 1

CHAPTER TWO

THE ÆSTHETIC ELEMENT 35

CHAPTER THREE

THE FACTOR OF SIGNIFICANCE 101

CHAPTER FOUR

THE MATERIAL REQUIREMENTS 155

CHAPTER FIVE

THE ADJUSTMENT 209

CHAPTER SIX

STYLES OF ARCHITECTURE 250

CHAPTER SEVEN

THE HIGHEST QUALITY 277

SUMMARY 309

NOTE 313

INDEX 315

LIST OF PLATES

		PAGE
PLATE I.	Vicenza	*Frontispiece*
PLATE II.	Musée Cluny	66
PLATE III.	York Minster	126
PLATE IV.	Bourges Cathedral	169
PLATE V.	Kedleston	175
PLATE VI.	The Parthenon	243
PLATE VII.	The Bourse, La Rochelle . . .	287
PLATE VIII.	Ca d'Oro	299

INTRODUCTION

It may be said with some truth that interest in architecture has recently increased in this country; that is, the subject is beginning to have a share of the attention which the British public gives to the "arts". Perhaps because education is more general and so many people read the kind of periodicals which mention it—or perhaps because, as foreigners tell us, British domestic architecture is on the whole so good, there is a considerable section of the public which cares for the thing for itself and the content that it gives. For these people an environment of good architecture is as essential to the business of living as fine painting, good music and well-written books. Such a regard for the matter is not yet general; in fact, it is rare to find an interest in it equal to that taken in music or painting; but very laudably people work to acquire this regard, and it is for them that I am writing these notes in the hope of stimulating further their interest and purifying the action of their judgement.

A man once went to Padua during a tour of

Italy and said he thought the interior of the celebrated church of St. Antony was a poor edition of Westminster Cathedral. Perhaps his judgement was a little callow and his sentiment for history peculiarly small, but his regard for architecture was of the right sort, because he cared solely for the thing itself and none of its accessories. He had compared the impressions given him by two rather similar large churches, one in Venetia and the other in London, and had formed an opinion of them *as churches*, quite unbiassed by historical importance, local association or age. He had studied and walked about in both and found himself most satisfied in the modern one, and so, quite properly, decided there was the best architecture. For like everything else done for the amelioration of life, the object of architecture is to give satisfaction.

Compare this man with the numberless people who travel and go to see a building because they feel bound to visualize the scene of some notable event or merely because of its antiquity. Some of them, of course, study the building itself and consider its place in the historical sequence of styles. It is "Norman" or "Gothic" or "Renaissance", or to be more exact still, it is late Norman verging into "early English", or it may be "Perpendicular" or "Queen Anne". The game is to strike the date by the profile of

the mouldings or the shape of an arch, and books of rules are obtainable.

Some people too, with scientific minds, study the structure. Their interest lies in the materials of the building and the way they are put together. Probably all these people will claim an interest in architecture. But if they do, their interest is not the right kind; for it is merely one of historical association, or of wonder at the number of years a building has stood; or it is the interest attached to a manner of building either for its adherence to the rules of a style or the reverse; or again it is merely the interest—certainly delightful—which the actual workmanship gives. None of these are truly architectural: they are merely accessory, though of some educational value. Their value, too, would be enhanced if logical thought on the subject and sound criticism were more generally cultivated. We should be willing to risk passing judgement on important ancient buildings, even if it is thought a little improper. We can do it with discretion, however, just as we do not openly deride the peculiarities of dress adopted by a distinguished old gentleman.

Apart from the experience of travel, a proper regard for architecture has been known to spring from the gratification a person feels when he has had something successfully built for him to-day. It induces a desire to know more about a matter

from which apparently some pleasure may be gained. It accelerates the right kind of interest in ancient buildings and engenders a final recognition of the fact that the architects of to-day are carrying on a work begun with the first building in history. Such people see the continuity of our occupation and admit its present vitality; they understand that we try to do for them what has been done for others since men first took pleasure in the form of shelter they had been forced to seek. They see the whole function of architecture through the centuries, with its fluctuations of achievement from a Cretan tomb to a modern cinema. They do not affirm that architecture died with the Roman Empire, or with the advent of the Renaissance, or even at the death of Vanbrugh. They see it actually still alive in the Victorian period. Moreover, their idea of Greek and mediæval architects is not merely that of a man in a flowing robe easily directing the erection of masterpieces in marble and stone, and their idea of a modern architect is not merely that of a man rather helpful in the selection of drainage systems. They recognize that they—the ancients—had also to do that, and that we—the moderns—might, given the opportunity, direct the erection of a masterpiece. I shall demand, therefore, the concurrence of my readers with this standard of comprehensiveness in their regard for architec-

ture; for it is the only one on which a modern practitioner can discuss his subject with those outside the profession. It must be an axiom in these notes—not merely a hypothesis—that we are the successors of Ictinus and Callicrates,[1] Anthemius,[2] de Lusarches,[3] Palladio and the brothers Adam, and that we are as necessary now comparatively to the demands of the age as they and their numberless colleagues were to theirs.

This slightly proud attitude is the corollary to the point of view of the man who went to Padua which I thought so commendable; for I wish my readers to take a view of the subject which is not only unbiassed by the accessory interests of age or place but is also wide enough to include in its vision buildings being carried out to-day in every locality. This is as essential for a full view of architecture as it is for an understanding of my thesis.

[1] The Parthenon.
[2] Hagia Sophia, Constantinople.
[3] Amiens Cathedral.

CHAPTER ONE

DEFINITION OF ARCHITECTURE

I

THIS subject of Architecture, then, has something to do with building. I shall begin a discussion of it by putting forward some definitive meaning to words constantly used in the process. To begin with, "building": this is derived from the Anglo-Saxon word *bold* which means a house. It is a noun and signifies either the building of houses or something built. The first and abstract meaning implies an act — something done — namely, housing or the provision of shelter for habitation or other purposes. The accepted interpretation of the word in its second or concrete sense includes every kind of edifice which is not naturally described as an engineering work on the one hand or as a decoration on the other. It can, however, include in a single instance the work both of the engineer and the decorator. But even in the most recent buildings the work of both these is subservient to that of the bricklayer, stonemason, carpenter, joiner and plumber.

When it is not so, the edifice is not what the ordinary man thinks of as "a building"; for if he were suddenly asked what he thought was a building, a house on a road would most probably occur to him first, then perhaps a church, or a bank, or a club. Undoubtedly the Forth Bridge, which is an engineering work, would not occur to him; nor would he think of the Victoria Memorial, which is a decoration. Both these were built, but they are not quite what we think of as buildings. For what we ordinarily think is the surest form of definition and customary idiom the most intelligible.[1] To emphasize this point, it will be recalled that boats are "built" and motor-bodies, but they are never thought of as buildings and have nothing whatever to do with architecture. It remains therefore to choose between the abstract and the concrete sense of the word "building" for the purpose of this discussion.

Assuming that architecture is something to do with building and that the connection is so to speak a concrete one, we conclude that architecture is something *added* to building, and the thought leaps to our minds that it is embellishment of building. Though in a remote sense true, that is the last thing I wish the reader to think; for that idea has been the cause of most of the misconceptions both in design and criticism during

[1] As Mr. R. P. Knight, writing on Taste in 1808 says, "Quem penes arbitrium est, et jus, et norma loquendi."

the last century.[1] It was the inspiration of all the stylistic revivals which followed each other in Queen Victoria's reign. It was an error partly and very beautifully encouraged by Ruskin. It has culminated in the business of the commercial decorator, who claims to turn plain buildings into fine architecture by the adhesion of his ready-made though individually pleasant ornaments. Its apotheosis is probably the Tower Bridge. Let us therefore decide that the connection between architecture and building is an abstract one. That means adopting the abstract meaning of the word " building ", which may be described quite plainly as the act of putting up what is generally known as a building to-day. It is something done—a human activity.

We all know of course what is the nature of this activity; nearly everybody has seen it. But for definitive purposes it might be described as the accumulation of materials and their construction into masses to form walls and roofs enclosing space. This is really all that happens in building, and it is all that the modern builder is responsible for. He does not choose the materials—he merely collects them; and he does not construct them into any masses he pleases—their shapes are indicated to him. He does all the mechanical work, but under direction, and this direction is given by the architect. That is what happens to-day.

[1] Sir Gilbert Scott said in 1879 that architecture, as distinguished from mere building, is the decoration of construction.

It has always happened more or less, even if, in the Middle Ages, the relation of builder to architect was peculiar. They were often identical, and both characters merged into that of master-craftsman. This, however, does not alter the fact that there were and are two separate functions, namely the provision of material and its construction in the first place and the choice of material and the direction of its construction in the second place. It does not matter to us if both were performed by one person, nor does it matter if that person was a master-craftsman, an eighth-century abbot, a Roman noble or a Babylonian king. It is plain that, unless the apparent coherence of many ancient buildings was miraculous, there must have been throughout the work the direction of one mind, even if the possessor of it was so to speak the contractor, or the employer or used a chisel in his leisure moments. Some modern architects use a chisel too, and they are sometimes actual contractors also, to the detriment of their own profession. Contractors as well are sometimes architects, to the great detriment of architecture; for the design and the provision of buildings to-day are each too complex and harassing to be made successfully by one man. If the rigid discipline of the craftsman to outside direction is very regrettable, as a school of thought asserts [1]—it is

[1] Ruskin said it was a mistaken supposition that one man's thoughts can be, or ought to be, executed by another man's hand. That is, there should be no architects, but only bricklayers.

the fault of the age, not of architecture. The majority of people to-day really prefer, in their hearts, to spend twenty pounds on an admirably made window than on a mantelpiece carved by the village craftsman as his fancy dictated. And that is the spirit of this age; and it is, I think, our duty to follow it, because, let me repeat, the object of architecture is to give satisfaction.

II

The method of this direction is the next point to consider. It will be recalled that I have described building as the accumulation of materials and their construction into masses to form walls and roofs enclosing space. Now shape is given to these masses by their boundaries and edges, and these are lines. A line does not really exist, but an edge does and is conceived in the mind of the man arranging it as a line bounding a space, either solid or void. Such spaces are flat and in two dimensions and in certain relations to each other form masses, again either solid or void. That is, if you build two walls facing each other and connect them at each end by two other walls, then place on the top a flat roof, you have inside a void and outside a solid mass. But both these results depend on the windowless walls and the flat roof, which, taken separately, are solid flat spaces bounded by lines, and their shape and the shape of the masses in consequence depend on the arrangement of these lines. Moreover, the

materials used, owing to their differing strength and nature, have an important effect on the masses and as a result the arrangement of the lines forming the shapes includes in its scope the choice of materials to form the masses required. Thus the method of the direction which an architect gives may be described as an act of arrangement of lines, or what architecture has to do with building is the arrangement of its lines.

Consider that a moment. What else has architecture to do with building? Does not everything an architect can do lead up to and affect and become crystallized in his arrangement of the lines of his building? Not only the choice of the materials, but the consideration of their cost; not only that, but what his client is willing to pay; and not only the wealth of his client, but his particular wishes and ideas on materials and planning in relation to cost. All these end in one arrangement of the lines of building by the architect. Again, his study of the site, of the labour obtainable, of similar works, of the climate, of the personality of his client even, are ingredients in the formation of a certain arrangement of lines. There is in fact nothing whether practical, artistic, legal, diplomatic or commercial which an architect undertakes which does not end in the synthesis of an arrangement of lines, first on paper, then in reality, and conformable to them all. It is the goal of his whole performance. The working drawing and its translation into

fact, both of them part of the act of arrangement, are his outfit. Their whole use is the complete fulfilment of his job. Hence architecture—an abstract thing—may be defined quite simply as the arrangement of the lines of building.

Now this is a phrase to explain the meaning of a word so as to provide a basis for the discussion of our subject. It is, I suppose, rather dogmatic to put down anything so precise, but the words are innocent. I have not even introduced "art" or "science" or said that architecture is a profession or a business.[1] My sole object is to convey to the reader an idea of what I and other architects do. What is at first sight arbitrary is the assumption of an abstract meaning of the word. But is a concrete one conceivable? We talk about looking at architecture. At the risk of seeming to fiddle with words, this might be said to be true. We look at the arrangement of the lines of building and study it. But what we really *see* is structure, solid concrete, and we perceive with our minds, after looking at the structure, the effect of the arrangement of its lines—that is, the architecture. So that when people say they like looking at architecture they really mean they enjoy the feeling which the perception of the arrangement of the lines of certain buildings makes on their minds. The word then must have an abstract meaning; it is

[1] Murray's Dictionary tells us that architecture is either the art of building or the science of building or the process of building or structure or style.

an act, something done—like building in its abstract sense. This meaning may therefore conveniently embrace the profession as well, which the dictionary tells us is an employment, not mechanical, and requiring some degree of learning. All the time, too, the thing done is a business, because we deal in other people's money and, like other dealers, have ourselves to live.

III

Now a number of human activities are described as "arts". This name has been given indiscriminately to any occupation in which there is an element of skill, because in one sense "art" means "skill". There is for instance the art of cooking. Fishing is described as an art, and Fergusson, in the introduction to his *History of Architecture*, includes heating and ventilation in a list of arts. He points out, however, that they are almost completely "technic" and only in a very small ratio æsthetic. One does of course appreciate ventilation with the senses, but it is not customary to consider the working of stoves and fans to be within the province of æsthetics, which, as Hegel tells us, is the knowledge of beauty. Let us assume, therefore, that an art is an occupation in which skill is directed towards the production of beauty. The question whether the arrangement of the lines of building by an architect is so directed, and if so whether we may consider architecture an art, can only be answered

after a discussion of the meaning of beauty and its peculiar office in architecture. Having settled that, we may decide, if we want to, to call ourselves artists, though I do not think this vastly important. Quite eminent painters describe themselves merely as painters, not artists. It is immaterial what we label ourselves, but very material to know what the labels mean.

It will be safe, I think, to begin by saying that beauty is for our purpose something to do with sight, with looking at things. People, I know, talk about beautiful weather and beautiful food; "a beautiful thought" was a well-known comment in academical circles recently. The adjective or the epithet was and still is a term of general approbation of the widest meaning applied to anything that pleases the senses, the imagination or the understanding, whether it is a material substance, a moral excellence or an intellectual tenet. That is to say, anything which is good or admirable or well done and therefore pleases us is described as beautiful. But, though customary, is it correct to do so? Have we not taken a word, the product of a narrower enthusiasm, and adopted it to comprehend exactly what we mean when we say a thing is good or admirable or well done? For that enthusiasm has arisen from a feeling of pleasure provided by something which gives us the finest feeling of pleasure we know; and for that reason the description of that pleasure is the epithet

conveying the highest praise we can impulsively bestow on anything that attracts us. Now this pleasure is what we feel when we enjoy beauty or appreciate a beautiful thing with our eyes. Hence we pronounce anything of any nature which gives us pleasure of any sort "beautiful".

This does not of course bring us any nearer to the meaning of "beauty" except to show, I hope, that the wide and—we might say—the improper use of the word may be discarded for the purpose of arriving at that meaning. That being so, the discussion is reduced to the pleasure which we feel when we look at beautiful things—that is, the pleasure which we get through our eyes by our faculty of sight.

IV

It has been observed that there is more than one way of looking at things: in fact, there are three. There is, in the first place, the simple perception of things—the mere "eyeing" of them and the noting of their existence before us. We do no more than grasp the individual side of an object—its particular and concrete form. Almost at once, too, the practical value of the object is evident to us: a need is felt to use, consume or destroy the thing. That is, we do not look at it in a disinterested way. Hence it does not necessarily please us, and this way of looking at things is not therefore that which provides the pleasure beauty provides when we

look at a thing. We *may* be pleased, but only because the thing is useful. It may be so useful and please us so much that we call it beautiful —like a nib which really writes smoothly. But that is only because we wish to praise it rather extravagantly.

In the second place, we may look at a thing in a speculatively thoughtful way, in a way which is more than the mere perception of the concrete existence of an object and different to the appreciation of its usefulness. It is the way which puts the individual object on one side to abstract from it the underlying law, the generality. We reason on it to arrive at a conception of its universality and its place in the scheme of things. It provides a scientific datum. This may also give us pleasure if the object offers scope for biological conjecture, like a larva of the Agrionidæ climbing up a water-plant. For it is delightful to conjecture which member of that family of dragonflies it will turn into and why it should. Were our joy in its contemplation very great, we might quite likely call the larva beautiful, but only on account of the scientific happiness it gave us and our wish to praise it for doing so.

The third way of looking at things differs from these two. It is distinguished from the first in that we look not at the thing as an object with utility value but at its appearance, its shape and colour. What it looks like is more important than what it is or what it does. We look at a

clock in this way not to tell the time, but to see whether it has a pleasant shape as it stands on the mantelpiece. That is, we search for beauty in a thing rather than practical value. It is the artistic way of looking at things. Moreover, it differs from the second or scientific way because it is interested in the individual object alone for its form and not at all in the underlying laws of that class of object, though it searches in that form for the pleasure which the faculty of sight alone introduces us to. What actually happens is that the eye looks at an object and is *re*ceptive of an impression from the action of the lights and shadows on it. This impression is conveyed to the sensorium of the brain by the optic nerve and of it the mind is *per*ceptive. This perception includes an operation of the understanding whereby it appreciates the nature and quality of the impression originally made on the receptive organ, the eye, and measures the power of the impression by assessing the pleasure which it gives.

Let the reader for a moment imagine himself in Yorkshire, near Richmond perhaps, or in Wales or Scotland, or in any valley in which a river winding through meadows between hills is the principal feature. He climbs to a point a little above one of the banks with a view up the valley. He proceeds to look at it. Possibly in doing so he notices that the sun is hot, the wind dry and the river seems cool and refreshing. So

he looks at the stream and its depths and shallows in the first way I mentioned; that is, he perceives it merely as a thing to be made use of. Having bathed and feeling stronger, he returns to the point above the bank and looks at the river again. This time he does it in the second way. He contemplates on it scientifically—its source and issue to the sea, its droughts and spates and their reason, why stones get rounded. So, dreamily reasoning, he arrives more or less at a conception of the river in the scheme of things. Then perhaps a little later, having tired of that view of the valley and his conjectures, he begins to move about. The sun has meanwhile moved much lower into the west and the colours on the slopes facing that way are intensified. Plain green becomes viridian, and where there was before a brown patch of dead reeds there is now a shape almost but not quite gold. Shadows stretch further, the hills seem to rise in sharper silhouette and the windings of the stream clarified by the pale light make patterns in perspective through the fields. He is struck then by the appearance of the scene more than by the factors forming the landscape, and moves about until he reaches a point where these factors combine their appearances to form one appearance which gives him the greatest pleasure to look at.

Why does it? Because the scene is beautiful. The view from that point is like a good picture. It is pleasant to look at and go on looking at.

We have searched for and found an arrangement of the scenery which has æsthetic value. We perceive immediately with our minds through our senses that it is charming, quite without the use of our discursive or reasoning faculties. It happens intuitively. We are delighted with what we see for its form and not for its practical value or its biological facts. It is only valuable for the æsthetic pleasure which it gives us. So we say it is beautiful. What do we mean? No more precisely than what we have just said—namely, that the appearance of the scene has æsthetic value. But it has beauty—we know it; we have been taught to say so when we experience this peculiar pleasure in the appearance of things. It is what we, the ordinary men, always say. It is the common idiom. What then is the conclusion? Must we agree with Mr. Clay[1] that beauty is merely æsthetic value and has no objective existence—that it is a value we give an object because we gain from the appearance of that object æsthetic pleasure? We must, I think, for the moment. Beauty, then, is æsthetic value. That will be our meaning of the word.

V

The reader will perhaps experience a certain feeling of disappointment—possibly irritation—which I had on finding it necessary to adopt this meaning of the word "beauty". It is so dull!

[1] *The Origin of the Sense of Beauty*, Felix Clay.

It was so pleasant to think of beauty as something very mysterious which had objective existence and which a few talented people were able to seize and infuse into great buildings, noble statues and famous pictures. Now we must think that such objects are in reality quite plain things—like a towel-horse in a servant's bedroom—and that their beauty consists merely in the weight of the appreciation of the people who liked them at any one time. Thus the Albert Memorial was beautiful in 1875 but is not so now. Similarly buildings designed by the Adam brothers in the latter half of the eighteenth century were immensely admired by their contemporaries. But Joseph Gwilt, writing in 1837, speaks of their "miserable taste"; while we, the critics of to-day, consider most of them beautiful and fit to be emulated. Thus learned opinion on the æsthetic value of buildings completely reverses itself in sixty years; and by having rather dejectedly to conclude from this that nothing was or is really beautiful except what the fashion of the day dictates, we are more strongly driven to accept the dictum that beauty is merely the æsthetic value we attach to things and that it has no objective existence. The end of this process of thought is the delightful idea that a painter, architect or sculptor might by careful propaganda and judicious advertisement increase the æsthetic value to others of one of his works and thereby cause it to be beautiful.

Nevertheless, this process of thought, though the apparent one to pursue, is false. It has merely a superficial reasonableness, because the dictum that beauty is æsthetic value is not an unqualified one, but is liable to be accepted as such. It is incomplete by omitting to state that when we perceive æsthetic value in an object and therefore call it beautiful, that value is due to some *particular quality* in the object. It is this which we perceive in our mind through our sense of sight, and it is the cause of the pleasure which we experience.

Let me recapitulate a little: we look at things in a way which is called the artistic way and that is one in which we are solely interested in the appearance or form of the object looked at. Next, we find on doing this that our minds intuitively note a feeling of pleasure derived from the perception of the appearance of the object. We then say that that appearance has æsthetic value, or in ordinary words we say the object seems beautiful to us. Note that we do not properly say it *is* beautiful, but only that it seems so to us. We are like the person who says he does not know what is beautiful but he knows what he likes. In doing so he is less ignorant than he is sometimes supposed to be, for his remark is based unconsciously on the assumption that beauty has no objective existence. His ignorance is less of what is beautiful than of what is the nature of the particular quality in objects

which are considered beautiful. And his ignorance is our difficulty, for there is obviously a confusion between cause and effect. That is, if we call the effect beauty—the æsthetic value of things seen—we are bound to assume that æsthetic value attached by anybody to any object at any time is beauty. That is impossible unless an unwavering consensus of opinion can be established. On the other hand, if we call the cause beauty—the particular quality in things seen which gives people pleasure—we are bound to explore and define the nature of that particular quality and, unless beauty is several things quite different, that particular quality must have an essential unalterable nature. Supposing, however, we could discover that beauty is æsthetic value attached to objects by the majority of people in successive periods because of some quality of the same nature always present in the forms of those objects, we should arrive at a basis for thought.

What are objects? For the purpose of this discussion at least they are all the things either natural or artificial which we are accustomed to look at in what I have called the artistic way. Beauty is manifested both in nature and in art, and it is possible to derive the same pleasure from natural objects as from objects in the making of which skill has been devoted to the production of æsthetic value. Now the ability to pursue this occupation is a gift: it cannot be learnt, though it has to be practised to achieve results. It is born

of an impulse to create pleasant things as strong as that which makes a man seek in science nourishment for his mind or in public life a theatre for his activity. It is the result of a creative exuberance which has to be satisfied. It is a special activity of the mind which aims at transmitting mental creations to have the same pleasant effect on other minds as they had on ours when we intuitively conceived them. Thus the habit of perceiving beauty in objects corresponds exactly with the occupation of creating objects with æsthetic value. It is the same thing, though, so to speak, the reverse process. It is also a gift, and people who cultivate it are often rightly described as artistic, even if they produce nothing. It is a gift, this sense of beauty, which most normal people are born with, but to which few devote much attention; and it is a vehicle of happiness in which general education seems entirely disinterested.

Now among natural objects which we look at in an artistic way our river winding through meadows in a valley offers itself as a useful example for further discussion. We had reached the point of enjoying and pronouncing beautiful the scene which it presented from a certain point in the afternoon light. Supposing we had wished to create an object of art out of the scene which so pleased us, we should have drawn and painted a picture; that is, we should have undertaken to re-present its appearance. But when we studied

that appearance we felt a peculiar æsthetic pleasure in it. Would merely drawing the lines of the river, the fields, the hills and the clouds re-present that peculiar pleasure? For I suppose what we want to convey to other people is not so much the physical facts of land and water, rock and air, but the extreme delight we felt in their combined appearance. So that merely drawing them would not be sufficient unless we knew that there was a particular quality in their combined appearance which would act as a vehicle to reproduce in others looking at our picture the pleasure we perceived in the original. Without this knowledge we might make an artillery panorama; but with it, great landscapes are produced.[1]

That is an instance from pictorial art, an occupation in which skill is directed towards the reproduction in others of æsthetic pleasure which was originally felt by a painter in scenery. Note that this reproduction is not beauty of nature but a manifestation of beauty in art. We, the painters, are first *re*ceptive of impressions of rocks and water, trees and air and shadows, but what we are finally *per*ceptive of is an accordance between the appearances of these things from a certain point of vision, which because of its harmonious effect has *one* appearance and is therefore pleasant. We do not know why we see it suddenly in this

[1] Looking at the landscapes, especially the water-colours, of Sir Charles Holmes helped me to formulate this thought.

way as a picture ; it is a performance of the brain consisting of a sort of æsthetic mental synthesis of the impressions received by it in the forming of the final perception. And it is this final perception we try to draw, imitating of course the forms of nature we see, but selecting only those which have valuable form for our purpose. If, then, we achieve the reproduction of our final perception successfully ; that is, if it gives us the same pleasure as the original did, though with more clarity, others will enjoy that pleasure, our pictorial work of art will have æsthetic value, and beauty—manifested in art—will result.

This will perhaps indicate a little what is the particular quality in the appearance of things seen which gives us æsthetic pleasure. For, in our landscape, as we finally saw it in our minds before we drew it, was not the cause of our pleasure the harmonious effect arising from the accordance of its features having one appearance—or, more shortly, its harmonious unity ?

I am aware, I admit, of a certain sense of redundance in the contiguous use of these two words, because unity and harmony are more or less synonymous terms ; nevertheless, I intend to keep them both for definitive purposes because, taken together, they suggest to my mind more clearly the idea of a unity arrived at by the harmonious action of the constituent parts of a thing and less the idea of one single simplicity. For, in this argument, the unity in the look of

an elaborate and stormy scene is more illustrative than the unity in the appearance of an egg. Moreover, the two words together postulate a unity attained after conflict and agreement of elements themselves varied, and concur thereby with the ancient definition of beauty as " variety in unity ".

VI

The particular quality in the appearance of an object which gives us pleasure when we look at it is therefore the quality of harmonious unity. It attaches to the object æsthetic value and is the essential brand of beauty. If we consider, too, the beauty in a human being, its meaning in art will be further attested. For the characteristic of the appearance of a human being or animal which we enjoy when we look at them is one of harmonious unity. We see a kind of reciprocity and mutual attachment between the organs, limbs and features of such a kind that each of them loses its separate existence to allow for an ideal harmony.

Now the question why this pleases us, though generally admitted, is always discussed and disputed. Up to a point of course it is sensuous. It is plainly pleasant to watch the rippling of a tiger's muscles under the luxurious skin when it moves. The eye likes it. There are certain movements of certain forms in nature which the eye definitely enjoys following. This fact may be explicable to a physiologist. But as well as

that, when we perceive this harmonious unity with our mind through our senses, our enjoyment attains to a higher plane in the deeper mental perception of this quality as a revelation of the animating principle—of life. Thereby it satisfies our mind, after tickling the eye. That is what art does when it reproduces this harmonious unity seen or heard in nature. It reveals the hidden life, the soul, the essence of things to the mind by a manifestation made to the senses. It selects and cultivates and glorifies things to show their essential nature by their appeal to our minds through our senses. It attains with beauty a kind of splendour of truth, as Plato said. Thus, if beauty is described as æsthetic value due to a particular quality of harmonious unity, we should add that it is due to it not only because that quality is the vehicle for sensuous appreciation, but because it is also perhaps the essence of that unattainable perfection of beauty which does, I am convinced, exist beyond the perception of human minds, to reach which we, toilers in art, if we are respectable, die unsatisfied in our longing.

VII

It will perhaps be observed in an attempt to assess the value of the pleasure derivable from works of art that this particular quality of harmonious unity rarely seems to be the whole cause of our æsthetic enjoyment. There is something as well which we sensibly note when

we look at them and perceive the fundamental quality. To begin with, this quality does not always seem quite the same; the solid pattern of the picture the thing presents appears, so to speak, a little distorted. It is very rarely a perfectly plain pattern. Without losing an atom of its harmonious unity, there are certain points of emphasis discernible in it; emphasis of one surface of an object or of a group of them, or of verticality or the reverse, or of a particular colour or group of lines. And we perceive at once that this distortion or emphasis gives to the original quality which pleases us a significance which is, so to speak, adjectival to it. It is a slight and pleasant shock to the sense, and probably we experience the additional pleasure which we get from its perception simultaneously with our delight in the pattern. Almost at once, of course, the æsthetic experience is transformed into an intellectual cognition, and we bring into play our judging or discursive faculties; but I am certain that the actual perception of the significance given to the harmonious unity is part of our æsthetic experience, and that therefore that significance is part of the æsthetic value—or beauty—of the object we are looking at.

Generally speaking, form becomes æsthetically significant through association with those general ideas of mass, space and movement which quicken our æsthetic pulses. Possibly this arose from our tendency to recognize, in concrete forms, the

magic of our bodily functions, and art transcribes these functions into concrete objects, like the translation into the dancing of primitive people of their beliefs and thoughts.[1] It will certainly be found, however, that there are, through this operation of the association of ideas, lines and forms, and combinations of lines and forms, colours and combinations of colours which have acquired a distinct expressional significance and convey notions of strength, repose, solidity, flowing motion, speed, subtlety and life. Take a well-known picture as an instance—El Greco's "Agony in the Garden".[2] Is not the convulsive arrangement of its lines extraordinarily significant of mental torment? And is not our pleasure in the contemplation of that picture increased by the whirling motion of its scenery? No unity is lost; it is no less harmonious, but our delight in it is intensified by its tempestuous significance. Looking at it we apprehend torture and positively feel agony. Moreover, it is all an æsthetic experience: we feel it all through our senses and make no use at first of our discursive faculties. We judge nothing; we merely enjoy looking. That is, the picture has great æsthetic value. It is therefore beautiful, though the subject is terrible.

[1] Mr. Geoffrey Scott in *The Architecture of Humanism* makes the tendency to project the image of our functions into concrete forms the basis of creative design in architecture, and the tendency to recognize in concrete forms the image of those functions the true basis of appreciation.

[2] In the National Gallery.

This brings me to a point where I may hope that I have achieved the presentation to my reader of some idea of the meaning of beauty—sufficient perhaps for an attempt to elucidate more thoroughly its peculiar office in architecture. In doing this I have referred to painting in a manner quite out of proportion to its position in the whole sphere of art; but for my purpose it is the best instrument to illustrate general ideas without turning to architecture itself for support —even if music is supposed to be much more equivalent.

VIII

I have said that an art is an occupation in which skill is directed towards the production of beauty and have since indicated that visual art may be taken to mean the business of exhibiting beauty by the display of significant harmonious unity in form. Beauty being æsthetic value, art then is strictly an æsthetic affair, and its operations are confined to matters in which our sense of beauty only is concerned. Further back I left unanswered the question whether architecture or the arrangement of the lines of building was directed towards the production of beauty and was therefore an art. We come to that now.

Consider for a moment a well-known natural object—a mountain, the Matterhorn. It offers itself clearly to the memory of any one who has seen it not only for its striking individuality

among peaks, but for the pleasure which it gives by the appearance of its form. Now that pleasure, once more, is due to our delight in its harmonious unity; for in spite of its lack of symmetry, its jagged edges and tossing glaciers, it achieves, on a clear day, an appearance of enchanting serenity. It is like the outside of St. Paul's Cathedral—an acknowledged masterpiece—in which four fronts, two towers and a dome rise in contrast but not in conflict, and in such an accordant relation as to give the utmost pleasure from their appearance for the very same reason. In other words, then, the outside of St. Paul's has for most people æsthetic value due to the harmonious unity of its form. Thus we might safely assume that Wren in designing it was guided by a desire for beauty, and that the occupation of arranging the lines of that building at least was one in which skill was directed towards the production of beauty. The architecture of St. Paul's is therefore art.

But what about the architecture of Victoria Street? The lines of building in that thoroughfare were arranged by various people. Look at any typical block of flats or offices and note the absence of any æsthetic pleasure. Carefully note, however, the perception of other satisfactions. The walls stand up, for instance; the windows open and shut; the lifts elevate us smoothly. But these very desirable effects are due to the arrangement of the lines of the buildings in which they occur. So also, on consideration, is the

stability of St. Paul's, and the amplitude of its interior as well. Architecture then is both an occupation in which skill is directed towards the production of beauty and is also one which is concerned with practical structure. These are two quite different occupations. But we architects only do one thing: we only arrange the lines of a building once in one way to achieve one object—good architecture. Ours is a single occupation.

This apparent paradox, therefore, provokes the thought that there must be in this business of the arrangement of the lines of building an element of adjustment of two things. We *have* to fulfil certain material requirements and we *desire* an appearance of beauty. The adjustment of those two is therefore our single occupation. It is the pith of the substance of architecture. Is it then an art? Yes, but under discipline. Is it an affair of common sense? Yes, but modified by a disposition to beauty, by the fun of creating form.[1]

I wish to emphasize very strongly this quality of architecture—its *one*ness, because from increasing experience I am convinced that this single act of adjustment of the two operations is the essential function of an architect. Decorators, painters and sculptors can produce beauty in

[1] As M. A. Vaillant says in *La Théorie de l'architecture*, 1919: "Architecture is in a supreme degree the art of discerning and *contenting* in one performance a number of delicately adjusted requirements: it is not building, but the correct response to the destination of the work in its exact and perfect suitableness."

formal objects; builders and engineers can provide safe and convenient houses. But architects, through the arrangement of their lines, can create buildings which are both safe and convenient and as formal objects have æsthetic value or beauty. And, as I have said, we do it with one arrangement, not two. It is therefore not the performance of two operations, even simultaneously, but rather the creation and performance of a third, higher and more delicately technical than the parent two. It is a little like the operation of the tank in war, a land battleship, totally different, but derived from experience of the two occupations of directing forces on land and sea. Our thoughts in the preliminary stages of a design are often occupied, I know, separately with the material requirements of the undertaking and with the appearance of its fulfilment, but gradually the adjustment of the two becomes the vital problem, and the result is like the bubbling of the sense of beauty through the colourless liquid of technical information in the test-tube of our minds to precipitate another substance of a totally different quality.[1]

That then is the peculiar office of beauty in architecture. It is an essential element, but alone it does not give the complete satisfaction derivable

[1] As when you mix carbon dioxide gas with calcium hydroxide solution, chalk in water is the result, viz. $Ca(OH)_2 + CO_2 = CaCO_3 + H_2O$: or, more advanced, if you subject a solution in water of carbon dioxide to the action of ultra-violet rays, sugar is left, viz. $12CO_2 + 11H_2O +$ ultra-violet rays $= C_{12}H_{22}O_{11}$.

from good architecture. For what is good and what is merely beautiful are in this matter distinguishable, and it is important that they should be perceived as such. The point to grasp, of course, is that our object in architecture is to give satisfaction—complete content—not quite the gratified feeling one experiences in the presence of good craftsmanship, admirable construction or notable convenience, and not quite the purely æsthetic thrill perceptible from a lovely shape, but rather an amalgam of the two, a blend with the peculiar flavour which architecture alone offers to its connoisseurs from its aspect of charming propriety. We like it best, that is, when it seems *very delightfully apt*.

IX

There is not, I think, any element of actual fitness in the beauty we perceive in architecture; firstly, because fitness is not strictly an appearance but a quality of material things. A jug, for instance, is fit when it holds water and can be carried about easily without spilling. And, secondly, there are a number of buildings in the world of great æsthetic value but of little practical use. Among them are those Italian palaces and villas which, though they cannot fail to appeal to any one with a sense of beauty, both for their appearance outside and the enchantment of their rooms, are rarely comfortable to live in, never warm and nearly always waste space for the sake

of grandeur. The perception of fitness in a building then is not an æsthetic performance but an operation of the reason, a judgement based on common sense. To pass that judgement we look at the building, I admit, but in the first way I mentioned when discussing the three ways of looking at things, and not in what we call the artistic way. We merely eye it, that is, and assess its utility. We do not consider its appearance, as an appearance.

Nevertheless, there is an important qualification of this dictum on fitness. It has to do with the function of significance. That, I have tried to indicate, is the effect of certain points of emphasis in the appearance of an object which are, so to speak, adjectival to its harmonious unity and give it character. This significance arises from our unconscious association of ideas and is part of the æsthetic value we attach to the appearance of a thing. It intensifies our pleasure. Why does it? Because—and this is a vital point—that significance is adjectively just; there is fitness in its choice: it gives the right character. Recall the El Greco picture. It was the tempestuous significance of the arrangement of the lines which intensified our pleasure in looking at the painting. A long, low, horizontal, well-balanced arrangement would have been much less pleasing, because less suitable, by the association of ideas, to an expression of mental torment. In other words, the significance of the form is

fitly adjusted to the subject—or purpose—of the picture.

It is the same thing in architecture. Let us take the well-known Salute church at Venice. Most people have some recollection of what it looks like. Outside, it is undoubtedly beautiful. The harmonious unity of its shape, except for a few lines near the base, is very apparent. Moreover, our delight in that shape is increased by the fitness of the significance we note in it. Now this was a church built by the city in 1631 as a public monument of thanksgiving to Our Lady for the cessation of a plague. It was therefore placed in a prominent position at the end of the Grand Canal so as to form a terminal feature both from the north and west and from the sea—a kind of focus for public pilgrimage. Hence a significance associated with ideas of what is due to such prominence gratifies us. We expect a look of rooted weight facing all the points of the compass with equal rigidity. Hence the circular plan. We expect, too, a significance in the lines to proclaim a loud and public acclamation. Could this have been more admirably done than by the strong verticality of the base, its jigging pediments, the famous voluted buttresses tossing their saints in the air, and the dome, the lines of whose metal covering even whirl the eye up to the lantern which, in its turn, explodes into vertical shapes, all bent at the summit to the feet of the Patroness?

Now imagine for a moment that this building was not a votive church, but a restaurant, with a lightning-conductor, not a statue, on the top. Our æsthetic experience would be just the same. We should enjoy its harmonious unity, the right significance of its plan and the rushing sense of acclamation from the walls, round the buttresses, up the dome and through the lantern—to what? Merely the top, a lightning-conductor. Immediately we should perceive a note of unfitness: we should condemn the thing as overdone, a little vulgar and rather unnecessary glorification of food and wine. That is, the significance, though present and æsthetically delightful, would be entirely wrong in its relation to the harmonious unity of the appearance of the building. It would be the incorrect adjective.

This rather strange illustration will serve perhaps to show what is the qualification of my statement that the perception of fitness in a building is not an æsthetic performance but an operation of the reason. It is a qualification to the extent that, though the statement still holds good, there are two kinds of fitness in the matter, and elucidation is necessary. Firstly, there is the actual fitness of the building for its purpose—its real practical value—and it is this which must not be confused with the appearance of fitness or suitability in the significance of its architectural form. For the appreciation of the first is solely an operation of our reason, an exercise of judge-

ment based on knowledge of structure and on common sense; but the appreciation of the second is not quite that and not quite an æsthetic affair. For we use our reasoning or discursive faculty to assess the propriety of the significance at the same time as we appreciate its existence in relation to the harmonious unity of the form. It is an appreciation by sense intellectualized by judgement, by a faculty or combination of faculties of the mind by which the quality—not merely the existence—of something which gives us æsthetic pleasure is estimated. It is an exquisite sensibility regulated by judgement. In a word it is Taste.

This introduces a new—and often a contentious—word into our discussion. However, I intend to assume its meaning to be what I have indicated above. It may be one mental faculty or the combination of two. That is a psychological question which it is not necessary here to determine. It is, I think, something more than a mere sense of beauty, because it includes an operation of the understanding as well as the actual perception and enjoyment of beauty by sense. It fuses these two activities into one which can be either a judgement on the form of some object or a decision on a line of conduct in creating an object: just as a sense of beauty is both the instrument of art which forms out of impressions æsthetic syntheses and is the faculty of the mind which perceives the beauty in such

syntheses when they appear in works of art. Taste does not create beauty—that is an intuitive performance of a special and autonomous faculty of the mind, guided by sense—but it dictates the application to use of beauty by means of the character of the significance it attaches to it.

We begin then to arrive now at a crystallization of our idea of good architecture—that is, of the arrangement of the lines of building which gives the greatest content. As I have reiterated it is only one arrangement and it consists in an adjustment of the carrying out of the material requirements with our desire for a pleasant appearance. Hence good architecture is that arrangement which adjusts best these two to each other. That is, it is the arrangement of the lines of building which, controlling by reason the practical matter and by taste the æsthetic affair, mixes the two in their due relation and forms thereby a successful coalition. But what is their due relation? Before going further into a discussion of that, which will have an important bearing on the conclusion of this book, I wish to apply more elaborately to architecture the general theory of visual beauty I have ventured to put forward.

CHAPTER TWO

THE ÆSTHETIC ELEMENT

I

In a discussion of beauty in architecture there is a preliminary matter which requires careful consideration. It has to do with the exact meaning of the words "the appearance of a building". They mean, we suppose, what a building looks like to us. But how do we see it? That is the point. Seeing a building is not so simple as seeing a picture in a frame on a wall or a statue in a niche. If we consider this a moment, we shall discover that the matter is one of some complexity.

Firstly, we never see buildings from underneath: that is clear. Very rarely, except from aeroplanes, do we see them from directly above. Quite often, however, we look at them from a point a little above or a little below. The Waverley Station at Edinburgh is a notable example; we have become accustomed to the look of its roof without ever having seen its sides: and the abbey at Mont St. Michael cannot

be seen at all except from below and advantage is taken of the fact. Again, we can see the outside of a building and its inside, but never both together. It is thus impossible to see a whole building ever with one glance. Then consider the outside. We can either stand directly in front of it or directly behind or exactly opposite one side and see in each case only one wall at a time: or we can stand at an angle to any one front or side and see two walls at once. We can only see the outside of a building in these two ways. If we go inside, however, into a courtyard or hall or an ordinary room, we can either look at one wall or two at once, or, if far enough off, we can see three walls, a floor and a ceiling all at the same time. The scope of architecture is therefore wider when it operates on the interiors than on the exteriors of buildings, and I shall refer to this point later on. What we have to decide now is, which of all these different and conflicting aspects of a building is its "appearance"; and the answer to that depends on something which is different in every edifice on earth.

In the first place, very few buildings ever put up are meant to be seen with equal effect from every point of view. Some with perfectly circular plans like the baptistery at Pisa seem to demand this appreciation. They do not obtain it however; for being quite round and—as it were—smooth all over, they appear exactly the

same from every point of the compass, with the result that the eye, followed wearily by the body, circulates indefinitely in pursuit of complete satisfaction. More pleasant to look at is a building like the Radcliffe Library at Oxford which, though it is round, has a definite entrance emphasizing one point in its circumference, to which the eye may return and rest. And, advancing from that type, we have those buildings which are circular above but octagonal or ten or twelve sided below, with one of their sides projected beyond the circumference and developed into a principal front. The Salute church at Venice again offers itself as an illustration. In this case, it is obvious, one or two sides are meant to be seen more clearly and more often than the others; and that among them which is most clearly and most constantly seen—the side to the Canal—is made the most prominent. For if we visualize that church from our memory, we see it always with that prominent front either facing us or at an angle, thereby dominating the other sides. That is, when we either look at or recollect the Salute, it is ordinarily from one particular point of view.

It is the same thing with St. Paul's Cathedral. We can, it is true, walk all round it and see it—if only in sharp perspective—from every angle, but if the reader will invite six observant people who can draw a little to sketch St. Paul's from memory, I am almost certain he will find that the

results all include a view of the building from Ludgate Hill, because it is seen most clearly and most often from that direction. It is extremely unlikely that one of them would sketch the inside or even a view of the outside from Paternoster Row. Then let him try the same six draughtsmen with Westminster Hall, and it is very probable that most of them would endeavour to draw an interior perspective view of the mediæval roof, and wide expanse of floor. Nevertheless, the inside of St. Paul's is impressive and the outside of Westminster Hall is, in a quiet way, delightful. May we not then conclude that all buildings of any character have one aspect which dominates all other aspects, one appearance which clings to the memory longer than the others, whether it be an internal or an external one, or an aspect of a single front, or of two or three sides, or, as in our second example, of practically a floor and a ceiling? Who, for instance, standing near the railings of St. James's Park and looking at the Horse Guards from the west, is not so entirely satisfied by the appearance of the building that he is totally indifferent to the possible charm of its interior.[1] Or again, what man, overwhelmed by the glory of Santa Sophia when inside it, has the ability—much less the desire—to discover in the streets of Constantinople an equal impression from the outside of the church? And

[1] But let him turn towards the north: the hope will then instantly enter his mind that the dominant aspect of the Admiralty is internal.

other instances occur to one: why perhaps bother to look at the sides of the cathedral at Reims when once you have seen the front? Or why climb up to Kloster Melk when you can sit in a boat underneath it—or for that matter, alight from the train at Durham? That is to say, as we all know, there is a "best view" of every building, and very nearly always it coincides with its dominant aspect, because its designer was intelligent enough to make it do so.

It may be arguable, however, that there are sometimes two or more best views of a building, as in the case of the inside and the outside of Chartres Cathedral. It is true that when we think of Chartres, we have either an impression of a dark and stately interior glowing with the richest glass or a recollection of a great pile of Gothic masonry sitting on a hill with two tall spires, each more lovely than the other. These may be equal: yet in my opinion the latter—the external one—is more strictly architectural, and the former is less an aspect of building than an atmospheric effect—an almost spiritual impression of Catholic splendour. And I should say, therefore, that from our prosaic point of view the aspect of the outside of Chartres Cathedral is its dominant one.

Theoretically, I suppose, we could conceive a building having all its aspects equally important, but only when it is small and costly—and, like the Cenotaph, nearly of the nature of sculpture—can this perfection be approached. The practical

element—the factor of commodity—in architecture is bound to prevent it and to produce the result of one aspect of a building being the most important and dominant over all the others.

Now that is what I mean, to begin with, by the appearance of a building. It is the appearance of its dominant aspect first, with the others which are less important in their due relation. The view down the back stairs of a house in Park Lane, for instance, is less important than the view up the main staircase, and that in its turn is less important than the view of the principal drawing-room as you enter it; and again all these matter rather less than the whole view of the house from the Park, which is its dominant aspect. Note that I do not suggest that they should not all be equally good, but I wish to convey that those aspects are relatively less clearly and not so often seen which are internal, for we are discussing *how* we see buildings, not what we see in their architecture. So we may infer from this example and the others I have mentioned that the dominant aspect is practically always the one which most people can see most easily and most often. Few men ever enter the Horse Guards, but hundreds stand in front of it constantly. The object of Westminster Hall was to provide a place of national assembly under one roof; and a vastly impressive space for worshipping crowds was probably—and very rightly—the Emperor Justinian's preference to a striking exterior to his

church. The Cathedrals of Durham and Chartres crown the hills they stand on, visible to thousands: and all the main entrances to the Cathedral of Reims are in its western front. Hence crowds see that front every day. Crowds, too, see the outside of the house in Park Lane and people constantly pass it. Am I not right, then, in saying that the appearance of this house from the Park is its dominant aspect? For if it faced instead a barren coast, the amount of possible æsthetic pleasure obtainable would be greater for its individual owner sitting in the drawing-room than for a stray fisherman tossing past on the sea: and the dominant aspect of the building would be then undoubtedly the appearance of that drawing-room within.

Firstly, then, all buildings have more than one appearance, even those which like the average London house have only one visible front. We can always find, however, some point of view—some angle or elevation—from which such a front looks best. Secondly, from all the possible appearances or views of a building with two sides we can select one aspect in which the two sides appear in happiest combination; and a good photographer does this intuitively. Thirdly, there is always a point at which to stand in a room where the three visible walls, the floor and the ceiling appear with the maximum effect. Giovanni Tiepolo, when he decorated the great ballroom at Stra for the Pisani, knew this and

based the arrangement of his deceiving perspectives on its unconscious acceptance by the spectator; for on entering it one is forced to stop at a point on the floor where the room is seen best, because the decoration is focalized from that point and compels our attention. Tiepolo in fact emphasized and enhanced the dominant aspect of the apartment with his painting and revealed himself therein as a true decorator. That is exactly what we may discover in good architecture also, as it will be found that in any building acknowledged to be even moderately successful, the architect in arranging its lines has perceived what would be its dominant aspect when built and has aimed at giving that aspect at least an appearance of beauty. Imagine, for instance, the great splendour of the Paris Opera appearing at the back instead of the front, or the rich intricacy of the western façade of York Minster replaced by a plain stone wall. It was this feeling I presume which provoked the rebuilding of the north transept of Westminster Abbey and impelled the Government's advisers to reface Buckingham Palace when the Mall assumed an imperial importance.

The admirable Wolseley building at the corner of Arlington Street and Piccadilly provides a further illustration. Its dominant aspect has been assumed to be towards Piccadilly: hence the extra richness of that front and the more severe beauty of the other. But I feel on looking at it

from the north-west—beside the Berkeley Hotel—that the architect has not quite realized the importance of the aspect of the building from that angle, and that though the general grouping is good the contrast between the comparative richness of the Piccadilly façade and the severity of the other is too sharp. The distinction satisfies the economical mind but not the artistic eye; and in my opinion at least, the view embracing both fronts of the building is the most important and therefore its dominant aspect. Nothing given to subsidiary aspects should detract from it: rather should they be sacrificed to enhance its harmonious unity. Moreover, this serves to indicate what determines the scope of the materials from which we evolve arrangements of lines to have beauty. For it is obviously limited to what can be seen from one point of view; and as most buildings can be seen from numbers of points of view, the scope is again limited to selecting the most important, or what I have called the dominant aspect, and to concentrating our efforts to provide beauty primarily on that. This is a limitation in the sense that it restricts our treatment of the subsidiary aspects to no more than is fit to their relation to the principal one: and let me once again point out that, though it suggests it, this does not mean that a house with a front to a street and a back to an alley should have the one beautiful and the other ugly. My point is that both should have beauty but that the appearance

of the front—the dominant aspect of the two—should have what might be called more exciting beauty: that is, the machinery of æsthetic value should be working more elaborately to rivet our delighted attention, while the appearance of the back, delicately echoing the clamour of the other, should quietly satisfy us as we snatch a momentary glimpse of it beyond the garden wall.

An architect, therefore, when he designs a building to stand on a certain site considers almost before he begins his sketches from what point of view it will be most often and most advantageously seen. It is then from that point of view that he sees it in his mind, as an object to appear beautiful to other people standing there and looking at it, and he restricts his treatment of the less important aspects of his building to an arrangement of lines which will support and supplement the good arrangement of the main one rather than distract attention from it by their individual brilliance. Unfortunately, however, we are rarely applauded for doing this and are accustomed to endure comments on the plainness of unimportant features by people who have not realized their subservience to a graduated scheme of richness. It is of course less trouble to go into a church and make a comment on a radiator than to walk several times round the outside—probably in the rain—and offer a really sound criticism on the building as a whole.

This is then what I mean by "the appearance

of a building". It is the image formed in our minds by its dominant aspect which, striking the note for all the others subsidiary to it, is by them enriched and strengthened, even if to grasp the dominance of that aspect we have to walk about, up and down, or in and out of rooms. Visit the Palace of Versailles, then come away and think suddenly of its appearance. What image presents itself? A building of vast width standing coldly rather above us in an enormous rigid garden and encasing in great arms of structure a chain of rooms. That is my impression of its appearance. No single impression of its interior or image of its other fronts could possibly dominate in my recollection its external aspect from the west; and so strong is the effect the great façade produces, one feels, proceeding through the rooms or approaching by the courtyard from the town that the look of majestic width of the building from the other side was what the architect strove definitely to attain above all others. It was his conception of a palace for a monarch on that site; so he made that aspect by far the most important, and it is to me at least, when I think of it, the appearance of Versailles.

Then for contrast visit Westminster Cathedral, a quite modern but a very notable building. As we come upon it through a narrow street, between tall blocks of flats, we see or rather feel somewhere above our heads a slender tower ending gracefully and backed by a great mass of rather dreary brick

and stone. But going inside and standing under the organ gallery at the back with a view towards the altar we receive what I think must be one of the strongest architectural effects in Christendom. For it seems that with no more than six or seven lines the architect has created an interior of profound solemnity. The simple arrangement of the lines of piers and domes, and the relation of the width of the nave to its uninterrupted length are the chief ingredients of what I cannot doubt was the first conception in his mind. He aimed quite plainly first of all at that great dark, smooth, eternal-looking cave, because I expect he knew, with peculiar wisdom, that it was the right aspect for a modern Catholic cathedral in a northern city. So realizing both the London climate and the cramped dimensions of his site, he made that internal effect very emphatically the dominant aspect of his church, and let the exterior work itself out as the construction of the inside dictated; unlike Wren in the seventeenth century who, radiantly reflecting the wishes of the citizens, built for them on a prominent site a commodious place of worship and an exterior which is a masterpiece to the glory of God—and of London.

These two examples then—the palace and the church—will, I hope, sharpen the point of our dissection of what we mean by the appearance of a building, when we use these words. It was necessary to make it clear to this extent in order to promote the proper appreciation of the

design of a building as a whole and not the improper use of it as a hunting-ground for æsthetic knick-knacks. It is a long step to the right kind of regard for architecture.

II

The appearance of harmonious unity in the arrangement of the lines of a building produces a certain effect on those looking at it, and this may be best described as one of repose. We enjoy the look of the building, of course, and experience pleasure, but the nature of the actual effect is, I am sure, more of the nature of comfortable restfulness than startling happiness. It is what we expect from building, because of the nature of structure.

Repose, however, has sometimes been considered and put down as *one* of the essentials of architecture, ranked with refinement, breadth, grace and other heterogenous qualities, that is, as something which it is a good thing to have in a composition, whereas it is, I think, more accurate to think of it as the effect on us of the one particular quality in good architecture which always promotes a feeling of æsthetic pleasure, just as it does in good painting, sculpture and music. For the least discordance in any of them detracts at once from their æsthetic value and we feel fidgeted. People often say, for instance, of a scheme of decoration that it looks "so restful"; and they do so either because of its own

harmonious unity or because of the appearance of that quality in relation to the surroundings. And the latter reason is especially applicable to buildings, for part of the function of architecture is the adjustment of the lines of a building to those of its site and background. It is an additional cause of the pleasurable effect of tranquillity produced on the minds of people, through their senses, when they discover good architecture: that is, the edifice apart from the attractiveness of its shape and of its individual walls, seems to stand well on the ground and grow naturally out of its environment—the effect being limited, of course, to the extent of the building and its surroundings which can be seen from one point at the same time.

That then is very broadly what I mean by the effect of repose—that tranquillity and happiness, comfort almost, which arises in æsthetic perception from the absence of discord. The term, however, is liable to suggest a negation of action, a sort of unwillingness to risk discord by bold and elaborate harmonies: and it is that suggestion which I wish to avoid by elucidating a deeper meaning of the word.

Bearing in mind how we look at buildings, let us, therefore, mentally visualize a farm or a small country residence. An effect of repose in the broad sense of the word is most obviously desirable in these, for should any of them appear in the least to assert themselves by their shape

or colour, they offend us at once by a flashy opposition to their natural setting. But is this sort of effect so desirable in a ballroom for instance? Does not propriety call for something more than unassuming suavity in the walls? There must of course be harmonious unity if we expect beauty; but is this effect the same as that which we enjoy when we contemplate the low thatched roofs and inconspicuous walls of cottages gripping a ridge in Oxfordshire? Fundamentally it is; but in the case of the cottages, the repose is that of almost inanimate nature, of rocks and ancient trunks of trees, the tranquillity of a stagnant pool, the quietness almost of death; while in the case of the ballroom the serenity which we experience from the enjoyment of its rollicking though harmonious arrangement is in the nature of the repose of a powerful living thing held in check, of an eagle poised, strong, full of the possibility of action, but still. The repose of the ballroom then is not in the broad sense, but—we might say—in a narrower one because it is only desirable in certain aspects of certain buildings. Nevertheless, it is repose we experience even if in achieving the experience we are more stimulated and excited by the effect of the harmonious unity of the ballroom than we are by that of the farm.

I think it is possible then to conclude from this that there is some variable element in the nature of the particular quality of harmonious

unity in beautiful things—some factor which, when it is strongly present, increases proportionately the excitement of our pleasure. I intend to describe this element as vitality; and it is that which I did not name when I spoke of the machinery of æsthetic pleasure appearing to work harder in the front of a house than at the back, because the former was the dominant aspect of the two. In all architecture this is the element—the factor in appearance—which raises the innate dull rigidity of structure to a look of active and sometimes riotous growth. When the Parthenon rested complete on the Acropolis, it could have hardly looked more rooted, more massively staked to the rock than the rock itself to the surrounding plain; yet the building, in its freshness must have seemed almost quivering with life in its magic lines and to have challenged the very living works of Nature.

Moreover, this great example suggests still further that inasmuch as vitality may be put down as the variable element in the nature of harmonious unity in architecture, the constant element in relation to which the element of vitality varies—that is, the one permanent and essential factor in appearance—may be described as stability. This is the bedrock of architecture, and in our discovery of the elements of its substance, it is the atom in my argument. A building must look stable: that is a dictum which requires no more analysis.

Thus we may define the deeper meaning of the word "repose" as that effect of vital stability in the appearance of a building which we enjoy in our appreciation of its harmonious unity: the sense of tranquillity which that particular quality in beautiful architecture provokes with its just adaptation of those two elements. Massive stability weighs us down: flighty vitality tires us. But a look of vivid strength—vital stability—pleases us like a friend. We lean on it and it rests us. Hence repose.

III

I believe Madame de Staël first described architecture as "frozen music", and though the expression has become a little vulgarized there was some sense in the original observation. For if we consider music for a moment, it is possible to discover a helpful analogy by defining it simply as the arrangement of sounds in time to provide æsthetic pleasure: but as to what this pleasure consists of has long been a subject of sharp discussion. One school of thought, described as that of the formalists, maintains that it consists of no more than the sensuously pleasing stimulus derived from the patterns in sound which the auditory nerve receives and transmits to the brain: and it is claimed that if these patterns have the fundamental quality of harmonious unity, they are beautiful and account for the pleasure which we receive. A second school

of thought, described as that of the expressionists, maintains that the stimulation of the emotions due to the significance of music is essentially the cause of the pleasure derived from it. Very probably both schools of thought are right: that is, each point of view is less inaccurate than inadequate to explain the matter fully. For the reader may recollect how I have claimed that the æsthetic pleasure which we experience when looking at a well-painted landscape is not solely due to appreciation of its harmonious unity, but to the heightening and stimulation of that appreciation by the appearance of a just significance attached to the form as well. He will recall El Greco's "Agony in the Garden" and its tempestuous lines. Now this significance which a great painter can add to the purely formal element in the beauty of his picture is the transcription, apprehensible by the brain through the eye, of the emotional state of the artist when he saw his picture in his mind before he drew it for the appreciation of others. He hoped with its use to reproduce in their minds that same emotional state which is so desirable for the full enjoyment of his thought. Moreover, I have claimed that our whole pleasure in the formal beauty of a picture together with its significance is an æsthetic performance of a high order, even if after experiencing it, the nice perception of taste indicates to us the rightness of the significance.

Now in the case of music it will be found, to

begin with, that it is not possible to apply the whole of this theory of visual art, for the reason that the bulk of musical compositions do not set out to *portray* anything definite. Hence what I consider so important in painting—the rightness of the significance which is attached to its formal beauty—is inapplicable except in certain descriptive pieces of music. Yet, as I have pointed out, the expressionist school attaches so much importance to the emotional significance of music as to claim that it is our sole source of pleasure; and for this reason—music does not select, like the art of painting, and transfer to others beautiful scenes with such emotional states as are their attributes, but it selects immediately an emotional state akin to those produced by the pleasures and difficulties of real life and by its art suggests these delightfully to people listening. So that we might almost say, if wishing to please the expressionists, that music heightens and intensifies the pleasure we obtain from its emotional significance with the help of the formal elements of its art: or, conversely, wishing to satisfy the formalists we might say that the pleasure we receive from the formal beauty of music is accompanied by that which we receive from the transference of states of emotion by means of its significance. I prefer on the whole the second comment: it matters very little indeed what we say so long as the difference is clear to the reader between the function of the art of music and that of the art

of painting, while he bears in mind that art is an occupation in which skill is directed towards the production of beauty and, for the moment, nothing more elaborate. He will also recall that we are now looking at buildings with the object of gaining pleasure from their appearance in exactly the same way as we look at paintings, and that up to this point we have treated the arts of architecture and painting, from the æsthetic point of view, in a quite similar manner.

The next step in our consideration is therefore that which will help us to draw a comparison between the art of music and the art of architecture and to relate the differences between these to the differences we have discovered between the arts of music and painting. For we cannot assume, merely because architecture is a visual art, that these differences are the same.

Now we have established that the part played by the element or factor of significance was that which caused the strong distinction between music and painting: let us, therefore, contemplate the actual function of this element in the two arts and in architecture—that is, not *what* it can produce but *how* it acts.

To begin with I think it is safe to say that all arts achieve their end—the provision of beauty—through some form of imitation. They do this by means of certain materials modified in a determinate manner. Sculpture imitates the human form by shaping clay or marble or bronze

into a similar form. Painting imitates scenery by applying to a flat surface materials which give light, shade and colour. Music too imitates the dynamic emotions of life by the arrangement of tones taken from a definite scale of sounds. But what does architecture imitate? It is commonly supposed not to be an imitative art: but if it *is* an art and if the others are imitative, we should be able to discover a reason for the qualification which we are bound to assume. So let the reader imagine himself for a moment inside any fully developed Gothic church. He will observe on each side of him a row of columns dividing the nave from the aisles. These are probably composed of thin clustered shafts supporting on fragile capitals even thinner stone ribs balancing vaults between them. That is to say, they appear to support each other; but if we look closer, we discover that the real structure consists of short horizontally laid stones piled up far into the vault ribs. Thus we see a structure of masonry; but we see as well an arrangement of its lines made by cutting them on the masonry, and this arrangement is an indication of a framework of pillars, arches and vaults. In this Gothic interior then, architecture, to please the eye, imitates in a structure of masonry the form of a constructive framework of stone: just as the Greek architects, also to please the eye, imitated in a structure of marble the form of an older construction in wood and so produced the triglyphs of the Doric order.

Hence we may say that architecture is an imitative art inasmuch as it imitates possibilities in construction, by making them appear in the arrangement of the lines but not in the jointing of structure.

Now consider once more the element of significance in painting. If we look at one of Crome's large, serene landscapes, for instance, we are certain to find in the arrangement of its lines a significance which is justly assignable to the subject. It will be unlike that of our well-used El Greco example, as it is less significant of an emotional state than of a quality atmosphere —or more simply, of a character of the scenery painted. For in several of Crome's works we find that the arrangement of the gently undulating lines greatly enhances the effect of serenity and peace which it seems so often his object to present. Similarly in portraiture, we note that the whole arrangement of the lines of the picture, of the subject's dress and of the background has a significance which enhances our appreciation of the personality of the man or woman portrayed. Thus in the art of painting, significance can be attached to the harmonious unity of a composition to stimulate either our enjoyment of a highly abstract moral or religious atmosphere or our apprehension of a low and undesirable character.

Can we find a correspondence with this elastic function of significance in painting in its function in architecture? This art, as I have

shown, imitates possibilities in construction. In doing that it provides forms which have harmonious unity and a significance—let us hope—which we enjoy because it is apt. Why is it apt? For the reason that the architect has made it significant of whatever quality the intention of the structure suggests; for he is able, if he wishes, to express somehow, in the significance of his forms, the purpose of his building. And there is elasticity in this: for just as painted form can be significant of a high moral atmosphere or of a low and undesirable character, so can architectural form be significant of the purpose of a cathedral or of the object of a penitentiary. In that elasticity in the function of the element the two arts are therefore similar. Yet there is some difference; for in painting, the addition to a picture of a significance assignable to the atmosphere of a scene, the character of a landscape or the personality of a sitter is much more valuable to the enhancement of our æsthetic pleasure in looking at it than is the expression in significant architectural form of the purpose of a building. For the affair in painting is almost vital for full portrayal, whereas in architecture it has not always been considered even necessary; and the distinction is probably due to the quite dull fact that after all we look at a portrait chiefly with the hope of seeing what a person is like (though some advanced thinkers aver we should not), but we rarely look at a building with the sole

idea of discovering what it is for. It is, to be sure, so much easier to walk in and inquire.

The element of significance in architectural art therefore, inasmuch as it appears as the expression of the purpose of the building, is not so consistently made use of as the same element in the art of painting. I hope, however, to be able to show that inasmuch as it appears in a second and a higher sense it is vitally important to great architectural achievement and that it is in this sense that it is similar to the emotional significance of music.

For this art—music—has all the opportunities for the display of formal beauty—that is, form with the fundamental quality of harmonious unity—to which the arts of painting and architecture have access. But as well as this it has the unique power of stimulating very exciting and dramatic emotions, quite independently of portraying anything on the one hand or of serving any useful purpose analogous to the provision of shelter on the other. It has no utility value except such as stirring enthusiasm, relieving fatigue and exciting courage. These and its uses in religion are really secondary values of music; for its great gift to the human race, as Aristotle pointed out, is its power of imitating the innermost activities of the soul. It touches through its symbolism the dynamics of emotional consciousness and duplicates them in musical sound, insuring our reaction to and pleasure

in them entirely without the presence of any imagery to direct our thought. That is to say, in our appreciation of the emotional significance of music, we feel much more than we think. It is in this department an absolutely direct intoxicant of our æsthetic sense, because, so to speak, it takes charge of it and feels all sorts of pleasant feelings for us.

Now the art of painting cannot quite do this. Of course, if it is considered purely as decoration, the power of painting is conceivably as great as that of music, and I must admit that the composition alone of that glory of the National Gallery —Michelangelo's Entombment—has for me at least an effect as stimulating as most of the good music I have heard; yet people have considered for centuries that the principal object of painting is the portrayal of something, and rightly or wrongly the art is thereby fettered with a utility value. This naturally involves a determination of the emotions stimulated. Hence the significance, as I have pointed out, cannot be selected in an arbitrary way, but has to be related to the quality which is characteristic of the scene or subject painted. It is true that a remarkably still subject, for instance, like an arrangement of boats on a placid sea by a Dutch master, if it is painted with a significance attached to the arrangement which is due to that quality, can have most certainly a soothing effect on us; but this power is not equal to that which a musical composition

would have to do this. The picture itself distracts us: we cannot look at it with sufficient detachment to see its form entirely apart from its subject. We cannot quite let ourselves be swept away into the semi-ecstatic oblivion of music by the formal beauty of even the greatest painting. Let me suggest, however, that it is almost possible to see buildings in the same detached way as we hear music, and that we can be almost as much exhilarated and enchanted by magnificent architecture as we are by great musical compositions. What a building does or is used for is not, as I have said, explained necessarily by its appearance. In fact, its beauty *need* have no relation to its utility (though we like it to-day if it does) and an architect may, therefore, possess an unhampered vehicle for the presentation of any emotional quality which he wishes to appear in his building.

Let me illustrate this with a very great example—Palladio's basilica at Vicenza. What traveller, visiting this glorious work, wishes to know what the inhabitants of the town use it for? Doubtless they built it for the pleasure of having something so delightful to look at; for the appearance of its outside walls is of such impressiveness that the draught of happiness obtainable from the contemplation of them entirely quenches any thirst for mere information. There is in fact in the architecture of this building a power of exciting a strong emotion analogous

to the power of music, and its splendour evokes a feeling of real joy. Let us analyse it and see, if possible, whence so much satisfaction comes. Firstly, there is our pleasure in the formal beauty of the arrangement of the lines: then there is to us moderns some pleasure in the justness of the significance of that arrangement, because the Palazzo has an appearance of rich dignity so desirable in the central public building of a town. But is that all? Do not the exquisite subtlety—and the refinement—displayed in every line, the strong, yet delicately strong, suggestion of support and weight gracefully held with splendid ease engender an emotion of lofty detachment from all mean pettiness—a detachment which is not proud but gracious, not fierce but politely and—with an air—grandly powerful? Among the few very noble buildings in Europe, this is, I am sure, the greatest aristocrat.

Perhaps my attempt to describe in words what is really a vague and abstract emotion, may convey what it is my object to emphasize, namely the rare but possible opportunity which lies in architecture of providing a high form of æsthetic pleasure similar to that which is obtainable from music. It is of course truly æsthetic, because we react to the tune which the building plays and before analysing its key or emotional tone, we enjoy reacting to it and feeling the sentiment it prompts. Looking at Palladio's masterpiece, then, we feel happy because of its formal beauty,

happier still because of the aptness of the significance we apprehend in it and wholly delighted by the feeling of gracious strength and nobility it imparts. That is, the look of the building uplifts us. Hence architecture can do, in a more limited way perhaps, what music ordinarily does. That is, it can, with an arrangement of lines of building like music with an arrangement of sounds in time, take an abstract emotional significance quite independent of the intention of the structure and present this delightfully to those who can see: and it is able to do it with some facility, because —as I have already noted—the portrayal of the intention of the structure is not of such consequence—comparatively—as the portrayal of the subject of a picture. In fact, we might even say that it is of so little consequence that architecture is from this point of view much nearer the art of music than the art of painting. When the opportunity occurs it can uplift us as much as the art which deals in sound. Whether this uplifting has a moral value or not, or whether it should have a moral value are questions with which we are not concerned at the moment.[1] My point now is that it is pleasant being uplifted in this manner, and that this pleasure is the fulfilment of the action of the element of significance in architectural art in a manner analogous to the action of the same element in music.

[1] Goethe said, "a good work of art may and will have moral results, but to require of the artist a moral aim is to spoil his work" (*Dichtung und Wahrheit*, ii. 112).

IV

I cannot claim that the above argument is not full of error, and I quite expect that men, learned in the several spheres of thought on to which I have impinged, will be pleased to deride it. But I have found it helpful to use the instrument of philosophical thought on the arts generally to form the basis of an explanation of the occupation —architecture—to which some of us seem devoted with an almost curious passion. Moreover, it fits what I am nearly sure is our process of thought when engaged in that occupation; and if one can get from an artist—that is the best word here—any semblance of an analysis of his mental action when at work, and if that agrees at all with a general theory of the function of art, there is perhaps some value in the exposition.

Again, when one matter is much discussed to the extent of a whole literature of its own and when another matter is little discussed and rarely so profoundly as the other; and if as well some sort of analogy has been established between the two, it will not be unsuitable, I think, to make use of the language of the philosophy of one to clarify the substance of the other. Therefore I employ to some extent the vocabulary of music to sift the springs of impulse in architectural design.

Now let us consider those last two words and their meaning to begin with. Architectural design

is simply the appearance of the arrangement of the lines of building from one point of view: and if it helps to mitigate the rather suffocating effect of theory, let us mentally visualize the dominant aspect of a building which we know and expect to be good: or if the reader is an architect, let him recall the design of such a building on paper or in model form. And let us remember that we are looking at it solely as an arrangement of lines formed by the edges of stone, steel, brick or marble, with the object of gaining pleasure from the look of that arrangement. Anything else about the building does not concern us.

What do we observe? Firstly, of course, the edifice looks quite stable: it does not seem top-heavy or unequally balanced, even if it is not quite symmetrical. It appears to stand, rooted to the ground.[1] It is pleasant to see that and we enjoy its perception: it supports us to contemplate it. Nevertheless, we do not feel weighed down by the massive stability of the structure, because its lines suggest something more than mere tenacity to the earth. We note that though the building looks rooted, it is rather planted like a tree than embedded like a rock: for pursuing its lines upwards, we enjoy the sense of towering growth they provide by suggesting an animate existence, gay perhaps or grave, slow or grim, or even merely contented and calm. It is pleasant

[1] Unlike the tower of the Hôtel de Ville at Calais, which—in perspective—looks very nearly unstable.

also to note this vitality : it excites us as we look. Then gradually, as we study the arrangement, we find a focus—as it were the heart of the thing—to which our eye returns gratefully and rests there, having felt and still enjoying feeling all the delicious intricacies round it. That point is the centre of unity, the essential fulcrum of symmetry. We are lost without it ; for the eye, like the body, demands a home after the pleasures of the chase, some harbour in which to unload and gloat upon its captures, while the thrill of swift pursuit is still upon it.

¶ Having discovered the focus, the next thing we observe is that there are definite paths formed by the emphasis or grouping of lines around it—clear tracks which lead our eye to follow them in certain directions, and quite distinctly in one direction as opposed to another. At one moment it is forced to travel horizontally, at another to shoot upwards on a column ; or it is made to jump from point to point along a row of columns or is caught and spun into the centre of a volute. It enjoys them all, whether they are straight or tortuous, so long as they are in some relation to the focal point. There is thus in the very act of seeing architecture, a kind of reciprocal movement round a focus, ordered by the emphasis of lines : and we enjoy this ordering because there is in it a suggestion—a feeling of that inherent property of all vital things which is called rhythm. It is this which accounts for the look of vitality

in anything. In fact or in appearance it is, like breathing, the ordered movement of life.

This will make a little clearer how the effect of repose which we experience from beauty in architecture arises through the action of the two factors in appearance — vitality and stability. These two, seemingly in opposition, yet produce a unison, the single look of vital stability. But I do not think it wrong to dissociate one from the other in our analysis, nor do I think that the duality of this architectural weapon has been sufficiently recognised by writers on the æsthetics of the subject. Personally I have always felt that in drawing buildings or in looking at them, the effect produced by the appearance of how the lines seem to *go* is as important as that of how the masses formed by those lines seem to *stand* in relation to each other. The two are of course inseparable as they both depend on the same lines, yet for our purpose it is undoubtedly permissible and possibly helpful to dissever their action.

There is opposite this page a photograph of a dormer window on the roof of the Musée Cluny at Paris. It is an architectural fragment, and I have not chosen it for its period or for its beauty or for its practical value as an aperture for light, but merely to illustrate our discussion. Now this window was probably so elaborately wrought for the sole object of pleasing the eye of any one looking at it, and it certainly does so—moderately.

PLATE II: MUSÉE CLUNY

It would have been possible, moreover, to make much less fuss over it if the introduction of light into the roof of the building had been the architect's sole wish. All this intricacy was done for the fun of it, so to speak, and the window is therefore very probably an object of art and a fairly suitable subject for our consideration now.

It consists of a rectangular void, divided by means of a mullion and a transome into two smaller rectangles and two squares, yet retaining its unity sufficiently to be felt as one shape rather than four. Above that is another rectangular mass of about the same height and divided into three parts, but this time into one solid triangle and two smaller ones which I feel are more void than solid. Finally the two main rectangles are united by the solid buttresses at each side carried the whole height of the structure and joined at their top by the horizontal line of cresting. The thing is perfectly symmetrical and well-balanced, for the possible top-heaviness of the part above the window is countered by the width and apparent support of the mullion and two angle buttresses. It sits well on the roof without looking heavy. It appears quite stable.

Now if the reader will fix his gaze on a point on the shield over the window and a little lower than half-way down the shield, he will observe that, round that point, there is a suggestion of motion in conflicting directions perceptible in the lines of the structure. Firstly, the two angle

buttresses seem to spring up at each side of him: it is impossible to feel them as lines going downwards. Secondly, the two covering lines of the solid tympanum over the window, held by the centre finial like an inverted letter Y, conflict with the first sensation by heading steeply down from the apex, bursting through the rising lines of the angle buttresses and being checked with difficulty by the stone griffons. Thirdly, this downward and outward motion conflicts with the upward and inward rippling movement of the carved crochets; and fourthly, the strong line of the transome and the level bar joining the tops of the buttresses, with the members of the cresting trotting evenly along it, suggest a horizontal swing in conflict with the other three.

Moreover, all these four suggestions of conflicting motion are repeated, supported and reflected by the smaller members of the structure. For instance, the upward-going lines of the little pinnacles with their elongated tops which are attached to the lower parts of the buttresses enhance the idea of springing off the sill: and they are repeated at the top with more emphasis, shooting upwards like a jet. Then the line of the mullion of the window, reflected in its turn by the lines of the jambs, echoes and supports the upward motion of the buttresses. Again, the downward and outward lines of the tympanum are gently repeated in the curve of the cardinal's hat, the hang of its tassels and the spread of the

fan-shaped shells; while the hat itself has its own little conflict with the upward and outward lines of the shield. Lastly, the rippling upward movement of the crochets is softly backed by the upward and inward sway of the tracery behind them, tending less rapidly in the same direction.

That then is what the appearance of the dormer window consists of as an arrangement of lines suggesting motion. There is in it, for so small a matter as a roof light, quite a strong feeling of movement in conflicting directions, of a steady pulsation up and down and across it, of a swinging rhythm. Hence its liveliness.

V

If we contemplate this dormer window a little and adjust the discoveries we have made in it to our general theory, we may progress a little towards the realization of the meaning of architectural design and of the nature of the particular quality of harmonious unity in it.

To begin with, the dormer window is a form in stone, contrived with some elaboration because, we suppose, it amused its creator to make it so. Now form has been described[1] as the general result of the reflected forces on the retina of the eye within certain boundaries, configuration or limits; and the word "forces" in that definition suggests an inclination to admit the effect of an appearance of movement as well as of an appear-

[1] By Mr. Cave Thomas in 1861.

ance of weighted masses. Thus the importance I attach to the consideration of lines suggesting motion is not due to querulous super-æstheticism nor is it entirely new. The element of vitality, however, and the strength of that element have not often been considered in a detached way—at least in architecture.

What therefore is the general result on the retina of the eye of the reflected forces of the dormer window? Firstly, we experience a feeling of supported and balanced weight: what we might call the legs of the structure feel sufficiently strong to hold it up, and the two of them, helped by the mullion, carry the weight equally. Again, it is possible to feel that if we could detach the window from the roof, drive a rod through it and spin it round the rod, the point we should pierce would be about one-third up the shield in the tympanum. That point is then the fulcrum about which the weights seem adjusted. It is the point of balance in weight. But the reader will recollect that it was on this point also that he fixed his gaze in order to observe simultaneously the suggestions of motion in different directions afforded by the lines of the structure. Now he will note that it is round this point that the suggestions of motion perform a balanced operation; for at each side of it and round it there is a feeling of equal forces tending up and down parallelly or in conflict. Hence—and quite naturally as the same lines do both

operations—the effect of balanced weight due to the arrangement of lines forming masses and the effect of balanced movement due to the suggestion of motion in certain directions have this in common that they both depend on the same focal point in the design for their apprehension by any one looking at it. That is, on looking at the focal point, we experience a feeling of equipoise and one of equipollence as well. In this dormer, for instance, it would have been just feasible to suggest downward movement in the crochets on the left side of the tympanum and upward movement in those on the right, with exactly equal quantities of stone and equal appearances of weight. The feeling of balanced movement, however—or equipollence—would have been destroyed.

This, therefore, suggests a conclusion, namely that the strength of harmonious unity in the appearance of a building depends both on the weight and number of balanced opposite masses, and on the force and number of balanced movements in conflicting directions. And I think probably the uncontested upward direction in all the lines of Milan Cathedral accounts for the apparent feebleness of its external design. This is not an effect of vitality, but of unchecked jumpiness: for as I have said, what accounts for the look of vitality in a building is a feeling of reciprocal movement round a point—a kind of rhythm.[1]

[1] Compare with this Mr. John Belcher's *Essentials of Architecture*.

Now this difficult word may be taken to mean in a wide sense movement marked by the regulated succession of strong and weak elements or of opposite or different conditions. It is the characteristic attribute of all organic action. I have mentioned breathing with its periodic recurrence of inspiration and the reverse. There are as well the regular systole and diastole of the heart, the rhythm of walking and the recurrence of hunger. It is the fundamental principle of all human activities and has, therefore, become an instinct in the realm of art.[1] It is so fundamental that response to a rhythmical stimulus is made unconsciously. Few people, for instance, find themselves walking out of step with a military band accompanying them along a street. Moreover, it formed the genesis of art. Primitive man beating a primitive drum did so rhythmically because it was instinctive to do it. That is, he beat it at regular intervals with a regular recurrence of accent: and like the dance of the Masai in Central Africa to-day, it was pure rhythm which gave the intoxicating pleasure to its performers. The appeal of rhythm is entirely

[1] As Mr. Galsworthy said in *Vague Thoughts on Art*—". . . and I argue that this rhythmic relation of part to part, and part to whole—in short, vitality, is the one quality inseparable from a work of art. For nothing which does not seem to a man possessed of this rhythmic vitality can ever steal him out of himself." And as Mr. Roger Fry said (in the *Fortnightly Review*, May 1911): "Rhythm is the fundamental and vital quality of painting, as it is of all arts—representation is only second to that, and must never encroach on the more ultimate and fundamental demands of rhythm."

emotional and the changed rhythm of the various movements in a sonata or symphony accounts to some extent for the different emotional states we experience as our attention is led from one to another. The explanation is said to be wholly physiological, for a rhythmic stimulus has such an effect on the nerve centres of the human body and so closely akin are emotional states thus engendered to mental states, that a musical strain with a slow tempo, for instance, tends to retard the physiological processes in the nerve centres, and to produce a feeling of hindered vitality.

The same thing occurs in the appreciation of architecture, and I have already indicated at some length its analogy with music, and have pointed out how our subject was more similar to the art of sound than to the other arts by its capacity to take quite independently of the intention of the structure an abstract emotional significance and present it pleasantly whenever the opportunity occurs. Let us, therefore, abandon the dormer window for a moment to consider the principal factors in musical composition.

Apparently the quite elementary factors are these: there is firstly what is called a tone—that is, a musical sound in which the vibrations are of equal size and duration. These are sounded by beats and when formed in groups of one, two, three, four, five, or six give us our second factor, the bar. Then, thirdly, we have accent—a certain stress on one (usually the first) beat in a

bar: and the recurrence of this at the regular intervals of the equal bars gives us rhythm. Moreover, taken all together, these factors suggest the first principle of musical composition, namely, reiteration or repetition; and this principle is based on the natural law of choice, for we prefer the ease of listening to a repeated pleasant noise to the difficulty of attending to a rapid succession of different noises, however jolly. Hence the monotony of savage music.

Civilized ears, however, demand a good deal more than mere endless repetition, with the result that bars are arranged in small groups known as phrases, and these in their turn are grouped to form a strain of music. This too suggests a principle, for the arrangement of these phrases is guided by a desire for balance—a certain equipoise between accented and unaccented beats within the bars and a kind of felt comparison, almost contrast, between equal phrases within the movement. Yet even that does not quite satisfy our sense of hearing, does not provide the complete æsthetic pleasure which the ear expects, because there is always our desire for unity in a composition, and a plain string of phrases cannot give that, however carefully balanced they may be: so that the third principle emerges which is called climax. It expresses in a word our demand for a beginning, a working up to a maximum excitement at a point and a gradual fall or cadence making an end.

These are the elementary factors. Now there are as well two standards in music, the one of time and the other of pitch. The standard of time gives us the bar, the accent and the phrase, and it deals with rhythm. The standard of pitch gives us the key centre and deals with the whole matter of tonality. The business of composition therefore is, in its direct sense, the arrangement of varied and even contrasting time divisions round the strict accent and a progressive motion to and from the key centre. And reiteration, balance and climax guide both, for in the case of tonality, for instance, a series of modulations from and to a single key is preferable to numerous erratic changes of key; and again, in the matter of duration or time standard, there are the larger rhythms of emphasis on recurring phrases which are not necessarily related to the rhythms of the accented bars.

This fragment of the theory of music may be helpful in our analysis of the dormer window if the reader will once more patiently recall his attention to such an insignificant architectural detail. It is one of a number lighting the second floor of the building: they stand in a row on the edge of the roof at wide but regular intervals. The external appearance of this storey of the building may then conceivably be thought of as a sentence in music and the dormers as musical phrases within the sentence, each phrase repeating the last but with the slight variations in detail

which these windows actually have. They are, as it were, recurring accents on the parapet; they are reiterated. Moreover, each dormer may be thought of as a group of phrases formed of single musical tones with its own little melody—for a melody consists of a series of musical tones grouped in rhythmic succession into phrases and sentences to express a complete musical thought. There is thus in the second storey of this building the slow rhythm due to the plain repetition at wide intervals of the dormers, but there are as well in the single window all the little rhythms of its component forms, overlapping it is true, yet distinct and properly related. They appear in the regulated succession of strong and weak elements, in the leaves and stalks of the crochets, in the repeated frisk of the cresting and in the little stabs of emphasis running up the buttresses. There is an abundance of repetition in the structure, and as it is concentrated on a small area of stone, corresponding thereby to a quick tempo in music, our reaction to it, physiologically through the nerve centres and so to the brain, is one of accelerated life. We experience and enjoy the feeling of vitality engendered. Moreover, looking at it musically—to use an extravagant term—this little group of phrases satisfies the ear quite sufficiently for an item in a composition by the apparent effect both of balance in its movements round the focal point and a kind of climax in excitement in the centre, over that point and

at the apex of the structure. Lastly, still looking at it in this translated manner the standards of time and pitch are thoroughly maintained; that is to say, the scale, though very delicately varied, is perceptibly the same throughout. One crochet for instance is not suddenly larger than the others, and the buttresses are neither too large nor too strong to appear to unduly strengthen the sides of the window. The standard of pitch too, which in architecture I think might be translated reasonably as uniformity, is strictly adhered to. There are no jarring elements in the composition: the same material, the same colour, the same style and the same touch of soft expensive richness is manifest in all of them.

VI

In order to relieve the strain of such minute attention to a mere window in the roof, let us imagine ourselves standing or walking about in the pleasant courtyard of the Musée. Like some other French palaces of the early Renaissance, it is composed generally of the façades of the surrounding rooms, intercepted at intervals by square or octagonal towers containing staircases. Imagine then one such façade in elevation, flanked at each side by such a tower. It is composed of three storeys: ground floor, first floor with parapet and the steep roof with our dormers standing at intervals. The whole front is also divided in its length into eight or nine distinct bays more or

less of equal width, and the openings, whether windows or doors or dormer windows, always occur in the centres of these bays and in accordance with a French tradition are exactly superimposed. So much I think will be easy to visualize; but there must be imagined as well, the three centre bays of the front noticeably emphasized, for their division is marked not only by the equal spacing of the bays but by thin buttresses in addition which rise from the ground to the cornice below the parapet. Moreover, the lowest story or ground floor of these three centre bays is marked by great open arches casting dark and pointed shadows on an inner wall, in contrast to the other bays at that level which contain only simple windows or doors. Thus travelling across the front from the tower on the left to the tower on the right, the eye experiences a moderately calm impression, then a more lively one in the centre and finally a return to serenity, though the main horizontal lines of the structure run right through it.

To return then to our musical analogy once more, we have here what might be looked at as a complete strain of music played on a whole range of notes. There is in this façade all that we discovered analogous to music in the single dormer and much more to amplify my theory. It is, like the other, in one scale: there is also very pronounced uniformity. Thus, so to speak,

it adheres to the standards of time and pitch. Then there is the great rhythm of the accented division of the bars, a kind of rhythmic succession of phrases beginning on the left, rising to a climax in the centre, balanced on the right and ending with the cadence of the final tower. Within this there are, as we have seen, the smaller rhythms of the details vibrating in the dormers, playing along the parapet and repeating themselves gently in the windows, doors and arches, all related and duly controlled by their position in the piece. There is, in fact, here a a hint of a rich but gentle melody running from one side of the elevation to the other; and not only a succession of single tones but, as it were, great chords succeeding one another, perhaps modulated slightly here and there, but chiefly in one key and each a separate harmony. There is throughout a unity of key, an adherence to time, a unity of style and manner, relieved at points with bursts of greater vitality by quick quavering in the treble, yet balanced by the strong slow notes of the base. The whole is held between the great chords of the flanking towers which begin and end it. Much happens between them—within the melody, but there is no jar, no over-emphasis, to spoil our appreciation of the harmonious unity of this quite simple front.

I call it simple, for in music the relation of melody to harmony is often an affair of great

intricacy. There are, I gather, at least three distinct degrees: for instance there is the case where the melody—or succession of notes—is not only enriched as a whole, but where the harmony is needed at particular points to bring out its character.[1] Secondly, there are those compositions where the melody in certain places needs the harmony to prevent it seeming incoherent and where the melodic element is present but does not stand out quite so distinctly;[2] and thirdly, there is that higher class of composition in which the chords have no definite relation to a distinct melody at all but themselves present a definite sound pattern.[3] In such music we discern not so much differences of pitch between single tones, but rather differences of quality between chords.

The same thing is found in architecture. We have in a well-arranged group of single-storied cottages, for instance, the simple melody of windows and doors running across it, with perhaps the very slightest suggestion of harmony in the arrangement of gables and chimneys above and in relation to them. We have also such façades as that of the Musée Cluny in which the melody is both enriched and clarified by the careful superimposition of elements to form, as it were, chords in a sequence; and we have as well great compositions in which the factor of

[1] *E.g.* the Intermezzo of "Cavalleria Rusticana."
[2] *E.g.* Handel's Largo from "Xerxes."
[3] *E.g.* Beethoven's Sonata, Op. 26.

melody is hardly detachable for the very intricacy and quantity of the chords themselves which make the pattern. It appears in those rare and great buildings where it seems the genius who created them delighted in the risk of tossing together innumerable forms and combinations of forms, knowing that none would detract but that each would enhance the others and emphasize the harmony of the whole without destroying its unity. Is it possible for instance to pick out a plain melody from the west front of Reims Cathedral? Or even a sequence of chords forming a melody? Is it not rather one great crash of tunes, exquisitely related, being for ever played at once by their composer? That is indeed the factor of Quantity which Hogarth in his wisdom put down as one of the six essentials of architecture; and if beauty be described as variety in unity great beauty is well expressed by Quantity of variety in Unity.

A last note then from this study of a French façade arises from the conception of harmonious unity which we may have arrived at with the help of the vocabulary of music. It is the thought that when I claimed that the appearance of adjusted movement in the lines of building was as important as the appearance of adjusted weight, my contention was not unreasonable. Moreover, this matter of adjustment prompts a further thought, namely that there is an operation of the mind, guided by some instinct, which can

arrange intuitively and at the same time lines which suggest in their grouping both weight balanced and movement countered for our pleasure. For this achievement of vital stability in the appearance of buildings may be called the machinery of beauty, but what drives that machinery is undoubtedly this instinct; and this instinct, I am certain, may best be described as a sense of Proportion. It is the thing which prompts and guides in a general way the working out of the desire for beauty in an architect's mind.[1]

VII

Once an architect of established eminence was asked to address his juniors on the subject of beauty in architecture, and—I am told—offered them for a recipe the one word, "proportion". We may, I think, justly assume that he meant to convey by the word what I have put down as the instinct which propels the machinery of beauty. Moreover, by the very laconic nature of his speech he suggested forcibly the extreme importance—in fact, the necessary existence—of this instinct for the operation of architecture. Without it, in fact, the successful performance of the arrangement of the lines of building cannot take place. It is therefore another of the words in this essay to which we must give some solitary consideration.

[1] As St. Thomas said, "pulchra dicuntur quae visa placent, ergo pulchrum in debita proportione consistit".

Firstly, as to the exact meaning of the word there is a variety of opinion: for instance, there is the common one which conveys the idea of proportion being an affair of adjusting quantities in relation to one another, the business of apportioning relative values to matter. This gives it a kind of transitive sense and is a perfectly legitimate meaning. Again it is very commonly used to express the relative quantity or size or force of two or more things to each other; that is, their actual relationship, expressed most easily in a mathematical way. Lastly, there is that which the eminent architect probably meant—namely, good proportion; and this requires much deeper interpretation, for it may be said that it embodies the other two.

Let us, therefore, take my second meaning of the word to start with and think of proportion only as the measure of relative quantity between two things. A room, for instance, 24 feet long and 10 feet wide, has an area of 240 square feet, and is therefore in proportion to the area of a passage 10 feet long and 3 feet wide as 8 is to 1. 8 : 1 is then the expression of the measure of their relative area. Now suppose this room had one window—a row of casements—8 feet long and 3 feet high, the proportion between the area of the aperture for light and the area of the floor would be 1 : 10. Suppose, however, the same window was 10 feet high instead of 3, the proportion between it and the floor would then be

1 : 3. Now there is no reason at all why this measure of the relative size of two shapes should be unpleasant, if it is considered solely as a matter of appearance; nevertheless it is most probable that for practical purposes the window would be too large; there would be far too much light, and people in the room would feel almost unsheltered by its walls. Hence the window, from that point of view, would be out of proportion with the floor.[1]

This almost paradoxical conclusion is not so difficult, however, as it appears, for the use of the word "proportion" in the second case is not really correct. The proper word to use is "scale"; and this has been admirably defined[2] as the relation of all the parts of a composition and an imaginary unit of measure which is settled by the fitness of things. That is, it is partly an affair of convenience as well as one of pleasure, an adjustment for commodity as well as appearance. In a building, scale is always dictated by the actual size of its principal practical features. A door, for instance, cannot be too large to hang on hinges, or steps so steep that it is tiring to walk up them. There is in fact a natural scale for buildings which we feel to be right, because it is based on the experience of centuries. Think of an agricultural labourer's cottage in a field.

[1] It is well known that a room, with a window area about one-tenth of the floor area, is efficiently and pleasantly lit.

[2] By Mr. Thomas Hastings in a Scammon lecture.

Any one could say to within half a foot what the actual sizes of its doors and windows should be. Then think of a palace for a nobleman standing in a park: here the sizes of the great entrance doors and the windows lighting the lofty rooms are only restricted by the necessity for a man being able to open them, and by the tensile strength of the materials of which they have been made. That is, the scale of the details and so of the whole of this building is much larger than that of the labourer's cottage. Hence, though there is a natural scale for buildings, it varies according to the purpose of the individual building, but the variation is strictly limited by the necessities of structure and convenience.

Now let us imagine that the same nobleman wished to build a pair of lodges at the end of a short drive and placed in front of his palace in such a way that they are always seen in conjunction with it. Even if these lodges were little dwellings to be occupied by the humblest labourers on the estate, it is certain that they would be designed in scale with the palace behind them and not in the natural scale of a labourer's cottage. Who has not seen, at the entrances to some of the great houses of this country, quite small lodges flanking a gate and containing tiny rooms lit by tall sash windows and entered by noble doors?[1] And most of them are delightful little buildings, though it is much more difficult

[1] As at Kedleston Hall, Derbyshire.

to design a small building in an exaggerated scale than a large one in a reduced scale. Hence the merit of these lodges when they are successful.

This will perhaps clarify a little the real difference between the two words "scale" and "proportion": for it is apparent that a wall may have a window in it which is entirely out of scale with the size of the room it illumines, yet in proportion—for some obscure reason—with the size of the wall itself. If it were not in proportion the thing would be wholly one to condemn, but as it is in proportion, though out of scale, we like it. And the reason is that when we say it is "in proportion" we mean the relation of the size of the window to the size of the wall is a pleasant one—that is good to look at—and that though the scale is unnatural it is good because it is maintained throughout the design. By this I mean the scale of our window does not change when we get round the corner to the door at the side or the window at the back, for they are all as unnaturally large as the original. Thus scale, if maintained, can never be bad but only unnatural; and even if unnatural it can only detract a little from the force of the beauty of a composition. As we all know, the scale of the interior of St. Peter's at Rome is so very unnaturally large and so skilfully maintained that the effect of magnitude as an element of splendour is greatly lessened. Nevertheless, the interior of St. Peter's is beautiful because its proportions are

good, and the interior of Cologne Cathedral is much less beautiful because its proportions are less pleasant.

We may therefore assume, I think, that the eminent lecturer undoubtedly meant by good proportion in a building that the first thing to achieve was maintenance of scale throughout it. As well as this he clearly meant to convey that the relation of the different parts of the composition should be pleasant; and this provokes the thought that there should be certain definite ratios between dimensions and sizes which are undeniably more pleasant than others. Possibly there are, and really eminent architects like Baldassare Peruzzi and Robert Adam intuitively knew them. But it is very unlikely that they could have stated them, though some learned attempts have been made by other men to establish why we like, naturally, certain ratios best. The very difficulty of doing so supports my thesis that a sense of proportion—so vital to the creation of beauty and the essential driving force of its machinery—is an instinctive thing. It is born in us and we toil to develop it. However, it may be of value to put before the reader a little of the theory of the subject.

If a straight line be drawn and divided in such a way that the rectangle contained by the whole line and the smaller segment is equal to the square on the remaining segment, that line will be divided in " sectio aurea ", or what has been

called the Golden Section has been made; moreover, if the reader will do this and look at it, he will discover that however he tries, no other division will be quite so satisfying. It is not a cut in half, nor is the smaller segment obviously a third or a quarter of the whole.[1] It is mystifying, but entirely comfortable. Now this has been known for centuries, and archæologists have traced its influence through the design of buildings older than the Parthenon and as late as the thirteenth century. Mr. Lund,[2] in fact, has made it the basis of all good Gothic art. Yet though we should treat these researches with respect, I think we need not take them too seriously, for there is very little proof that any successful building in history was set out from the beginning on a theoretical basis of proportion. It can be shown, however, by drawing angles on their plans and sections that quite a number of churches fit, or almost fit, into a diagrammatic frame built up on a theory of proportion; thus showing, I think, that their architects had not some semi-magic recipe which they jealously guarded, but that their designs, in common with all other good designs for mere shapes, were guided by a sense of proportion the ordinary ratios of which were to their users intuitive, though perhaps geometrically founded on some instinct in the remote past

[1] Actually the larger part is ·618 of the whole.

[2] In his book, *Ad quadratum*, published under the auspices of the Swedish Government.

history of man. And it is quite true, as Herr Fechner points out,[1] that a rectangular opening such as a door or window, whose adjacent sides are in the ratio of parts of a line divided in golden section, looks well—or rather pleasantly correct. In fact, we cannot deny the existence of this and one or two other mathematical preferences—laws which are responded to by an inherent principle in the human mind, regulating every effect of external nature on our senses. I think, however, that it is unnecessary to do more than allude to their probable existence. I shall not try to enunciate them like Pythagoras in 520 B.C., nor explain with Plato the beauty of the elements of the material world by showing they resulted from three angles.

This "sectio aurea" then is an illustration of the word "proportion" in its simplest sense. It is both a certain measure of relative quantity and a pleasant one; but "good proportion" in architecture or what my laconic lecturer meant is a matter of much wider scope, as it covers the entire disposition of the masses in a design as regards their appearance of relative size, weight and vividness.

Contemplate this meaning of the word a little. What are the masses in architecture whose relation is affected by proportion? There are the features —doors for instance—and the relation between the length of their tops and sides. Then there

[1] In *Zur experimentalen Ästhetik.*

is the relation between the size of the windows (or doors) and the wall they pierce; that is a proportion between voids and solids. This is complicated too by the relative sizes of the windows and doors, or of the walls of one part of a house to those of another, or the height of a central tower to the height of the roof of the nave in a church. Then there are proportions like the depth of an entrance arch to a station in relation to the width of the arch and the height of a dome inside to the breadth of a circular floor below. So that, generally speaking, there are the proportions of the parts of the details of a building and the proportions of the details to each other and the proportions of the details to the whole. Thus any recipe for success such as is offered by the Golden Section can only help us in the very preliminary and rather abstract adjustment of one of those three relations. If good proportion is an affair of such scope as I suggest, its laws, if there are any, must be more compendious things than the mere cutting of an abstract line in such a way that one part of it is about three-fifths of the whole. That is to say, though proportion is fundamentally a measure of relative size between two things—and most probably there is an ideal proportion between two lengths—I wish the reader now to elaborate his mental conception of it into an idea affecting the whole disposition of the parts of a building, whether large or small, and in all relations: I

should like him, at this point, to think of good proportion in architecture as that happy adjustment of apparent weights and apparent movements in the arrangement of the lines of a composition which gives the required effect of vital stability. It is the nice allotment of emphasis on groups of lines to make comfortable masses and enjoyable rhythm.

VIII

Bearing in mind my two postulates that the effect of repose is the result of a look of harmonious unity in a building, and that the achievement of an appearance of vital stability is the machinery, driven by the intuitive sense of proportion, which produces that effect, the reader will most helpfully glean a total conception of the particular quality in all buildings which are beautiful if I take one actual example and apply these statements and all their corollaries to its analysis.

The photograph[1] shows the dominant aspect of the Loggia Bernarda at Vicenza. The building stands at the junction of a small street and an important piazza: thus only two sides of it are ever seen; of these two sides the one almost facing us and towards the piazza is most often noticed by the inhabitants of the town. That side is therefore more emphatically rich than the other. Nevertheless, unlike the Wolseley building at the junction of Arlington Street and

[1] Frontispiece.

Piccadilly in London, the contrast between the two sides of the Italian work is achieved less by a greater degree of richness in the main front than by a grander quality of richness. Hence the single impression which the dominant aspect of the building gives does not suffer the slight loss of unity which I ventured to discover in the English example.

Let us consider, therefore, the means by which unity in the general design is maintained throughout its appearance. There is firstly that factor in musical composition, the standard of time, which I have translated into architectural scale; that is, the relation of all the parts of a building to an imaginary unit of measure dictated by the fitness of things—in other words, the purpose of the building. Now the object of this building can be seen at once. It is quite clearly municipal and it is much used. Important people go in and out of it, and at the period when it was put up, important people moved with escorts round them and even canopies held over them. Large entrances were therefore a vital necessity, and one or two big rooms for public business were also essential. Hence the large windows. Moreover, municipal affairs carried on with a proper dignity are more important than merely domestic matters or private business. So the building had to look important even if it was not large. And this is why the scale is big—almost unnaturally so, if it is compared to that of the adjoining

house. The necessity for this too and the practical need for large windows and doors were complementary demands on the architect. The two ideas were happily in harmony and we appreciate the fact that they have been treated so. It is only an intellectual happiness, however, and is similar to the distress we always experience when we recollect that the Banqueting Hall in Parliament Street is one large room inside though it looks like an ordinary house of two stories outside. Our sensual appreciation of its beauty is not thereby diminished; only our intelligence is affronted. Similarly in the Loggia Bernarda, appreciation of its appearance, as an appearance, is not stimulated by its truthfulness. It is merely nice to know that it does what it looks as if it did.

Now this rather unnaturally large scale is maintained almost throughout the design. The great composite order seems to accord with the high arches and the big windows. They are in scale with each other: for such an order, with four or five rows of windows below the line of the frieze, would look out of scale if compared with this wise treatment. Take some details also. The thick reveals of the arches, for instance, are in scale with the width of the piers between them. The balconies project well forward and cast heavy shadows in scale with the greater black voids below; while the massive corbels supporting the balconies and the fat and widely spaced balusters are in a smaller scale than the

actual one of the main order but, for their size, they are large and heavily proportioned. The only things which are really out of scale are the two pairs of gates, which are insignificant, and the lamp at the corner, which, of course, has nothing to do with the original building but—to illustrate my point—should have been much larger and more elaborate.

Secondly, the standard of pitch in music or what I translate as uniformity in architecture, is well maintained in this building. In a general way, it has been composed in a very grand manner: that is, it is rather heavy, very dignified and extremely rich. There is a look of plenty of material throughout; nothing has been skimped. The unrelieved almost shiny rotundity of the columns is supported by the thick, carved, curling volutes of the capitals, the large bellied balusters, and the almost luscious surface ornament. Moreover, there is great reiteration of a kind of heavy squareness apparent—in the shape of the balconies, of their corbels, of the bases of the columns, of the capitals of the piers to the arches, of the great blocks formed by the breaks in the entablature, reflected more gently in the parapet and attic—and all uniform with the square block-like look of the whole building. And, of course, because this is a design composed of practically one classical order there is complete uniformity—in fact, absolute repetition—in the details of that order. Each of the four columns

on the front, with their entablatures, are exactly alike from the ground to the sky. All the spaces between them are therefore almost exactly alike. Any variation, not from the standard order but between these editions of it, would, of course, be unthinkable to any one who appreciates the worth of classical tradition, for apparent uniformity—adherence to pattern in fact—is its foundation.

As regards scale then, and as regards uniformity, there is very little in this building to detract from an appearance of unity. The singleness of our impression of it is not jarred by any serious error in either of those directions. But we might call these negative virtues, and the points of positive value will be more clear if we consider what provokes the fact that we do get a single impression of it—that we grasp it at once as a complete thing.

We see two walls rather like cliffs, almost fifty feet high, at right angles to each other and obviously enclosing rooms. They and two other invisible walls are apparently joined by a flat tiled roof. Thus we perceive a square block of building though we only see two sides of it. At a point about five-sixths of the height from the ground to the top, these two walls are suddenly thrust out in a great ridge and even more suddenly thrust back for the rest of their height. The prominence of this ridge is such that we almost feel—though not quite—that it forms the top of the walls and that the attic is merely supple-

mentary. As we do not feel that completely, the appearance of unity is not affected, though our vision is severely jolted. Again, at a point about four-sevenths of the height from the ground to this ridge there is a second but less prominent projection running across both walls, reflecting the character of the other but strongly dominated by it. And we note with pleasure this dominance, because it stimulates our appreciation of unity by keeping the smaller feature in its place. Similarly we note that there are in both walls arched openings below this second ridge and smaller window openings above it, and that the ridge itself is thrust forward to form balconies where these window openings occur. The fact that it does so on both walls, though not quite uniformly, again facilitates our single impression. Finally, we note the most important point of all, namely the dominance of the composition of one wall over that of the other. For to appreciate the appearance of two walls of approximately equal width and height there must be a certain supremacy allotted to one or the eye would leap incessantly from side to side in the ever-failing search for repose. For an effect of unity you cannot have an unresolved duality: if the thing is manifestly composed of two main parts there must be an emphasis, an exaggeration, a supremacy given to one. Hence, as I have said, there has been given to the piazza side of this building a grander quality of richness and thereby

an emphasis over the other by means of projecting the main ridge at four points, in a similar but stronger way to the projection of the lower ridge, and by carrying this jut forward up through the attic to the roof and down through great columns to the ground. Our satisfaction is then immediate: we look at that front only but perceive both in a single impression.

I think we may justly assume, therefore, that there is beauty in the architecture of this Loggia. It is fairly clear that the lines of the building are so arranged that it is possible to discover in that arrangement the particular quality of harmonious unity for which we are searching. I have shown, in fact, that it has certain points which are likely to aid us in this discovery. So if the reader will allow his glance to drift about the building in the photograph in a quite vague and pointless fashion it is very probable that, after a time, he will find it resting at a point over the central arch of the piazza front and underneath the balcony—that is, on a small blank space where there is just visible some faint inscription. Moreover, he will find a certain comfort in keeping his gaze fixed stationary here because it is the point from which it is most easy to appreciate the single impression of the whole edifice. As in the case of the dormer window, this is the point round which the whole appearance of the building swings; and it is here where we should, so to speak, unconsciously attach a string if the Loggia could

be conceived to run on wheels and be pulled out into the piazza. It is again the centre of gravity, the fulcrum, the focal point in the design. Fixing our gaze on it we perceive the stability of the whole and the vitality of its parts at the same instant. We feel the great repeated thrusts of the columns to the earth, balanced by the towering effrontery of their entablatures, and the deep arches bouncing between them and round the corner, but held and checked by the massive shafts in front and the smaller ones at the side: we are overhung and increasingly crushed by the corbels of the balconies, the breaks in the lower ridge forming the balconies themselves, the dangerously drooping volutes in the capitals, and, worst of all, by the great black cornice with its bristling modillions; yet these too are balanced by the retreat of the attic and our repose is restored. We are submerged and lost in the thick voluptuousness of the surface ornament between the windows, but find consolation and relief in the light transparency of the parapet, itself contrasting with the plain flatness of the attic wall behind it. In fact, we are gloriously tossed about in a delicious but ordered and rhythmic tumult. Form repeats form, theme balances theme, light contradicts shadow and dark severity is matched with engrossing delicacy. As we watch the focal point all this happens round us. As it were, it lives. Lines go, shapes rise: forms repeat themselves, not tediously, but just enough to give us

that quantity we wish, and all with a blustering intricacy and such grandeur of gusto as to suggest not a mere house—a thing to sit in and avoid the rain—but great architecture, fashioned by a man out of brick and stone for the sheer pleasure of our eye.

Yet there is perhaps something in this building which prevents it being a very great work. I am willing to dare to suggest that though the unity of its composition is quite apparent, its scale perfectly maintained and the character of its parts entirely uniform, there is in the fierce but balanced conflict of its lines not quite sufficient climax. There is of course the supremacy of one front over the other, and, in another way, the great cornice dominates the whole; but these are merely the first essentials of unity. What we want is a culmination in harmony—some explosive crash of forms and lines and shadows on or near the focal point. For though we feel quite comfortably that the composition does begin and end and that all the main harmonies are loud and very exultant, we would have liked to feel some point at which the clamour was the greatest, some zenith in the jolly turmoil to which we might just rise a little more, rest on its pinnacle an instant and then descend deliriously to the close. It is not for me to correct Palladio, but perhaps an armorial shield, quite small and thin, hanging well out from the middle of the centre balcony like a tongue or a Hapsburg lip, would have given

us just that touch of emphasis so wanted. Yet perhaps he knew this and foresaw that when a great official personage, fully robed, appeared at this window and from the balcony delivered an impassioned speech, his composition would be then complete, there would be proportion in all its parts, and a triumphant unity in its harmonies.

CHAPTER THREE

THE FACTOR OF SIGNIFICANCE

I

THE word "significance" has been used a great number of times up to this point in my discussion without the elaboration of its meaning which it properly demands. Therefore, having put forward a conception of the nature of harmonious unity, I propose now to enter into a consideration of the concomitant factor in the æsthetic pleasure we discover in architecture when it is beautiful.

Significance can literally mean two things. There is an implication in the word both of expressiveness and of impressiveness: that is, it can convey the idea of a thing simply standing as a sign of something else, or, in the other sense, of anything important, momentous or forceful. An ironical telegram is the one, and a speech on education by a statesman is the other. The first may be momentous as well; but the second need not and properly should not cloak subtle political innuendoes in the language of an academical programme. Hence the phrase "significant

form", which is often made use of in criticism of art to-day, is likely to entangle us in a confusion of thought, unless we study it here for a moment.

As far as I am able to judge from the words of those writers who make use of this phrase, the adjective is undoubtedly nearer my second meaning of the noun from which it is derived than my first. It is used to convey, I gather, an idea of impressive form or of pattern which is attractive for the forcefulness of its beauty, *i.e.* for the strength of its harmonious unity, rather than for an expression of character in the arrangement of its lines. These critics prefer the Italian primitive pictures and a few of the advanced modern paintings: they pursue impressive rather than expressive beauty and attach much less importance to a significance such as is exposed in El Greco's "Agony" than to a perfectly harmonious unity full of vigour. Perhaps this explains their occasional indifference to the portrayal of anything by a painting.

The opposite of this point of view is the strange one which demands plain representation —an exact photograph: and though this has practically nothing to do with art or beauty it will serve as one pole from which to stretch our thought towards the other and strike the mean between them. I propose to take a moderate view and uphold the safe opinion already offered in these notes on architecture, namely, that significance is a properly qualifying expressive-

ness added, by some means, to the unity of an arrangement of lines of building which delights us for its harmoniousness. The advanced modern critics may be right in their rather different interpretation of the word as regards painting, even if the public prefers nice clear views of scenery and touching incidents in its pictures, but my subject has to do with building and that involves play with other people's property in material and money. Thoughtful play, that is: for you cannot sketch in architecture. Forty oil-paintings cost their creator less than an artisan's dwelling and experiments in building take months, not minutes.

However, to remind ourselves of what we said before, let me take another instance from painting. Let us suppose we wish to make a picture of a summer evening on the Thames at Marlow. Now my view of significance in architecture would be translated here into the conviction that the idea of time and place could be best conveyed, in paint on canvas, by emphasizing the horizontal lines of the scenery, the flat perspective windings of the river and the long thinness of a punt rather than by drawing attention to the verticality of an occasional poplar, the straightness of a reach, the medley of boathouses or the riotous behaviour of people in a skiff. In neither case need they be photographed on the one hand, nor do I see, on the other, why the houses and trees and people need look exactly like such things:

but if the pattern is ordered properly—this is, if it has the essential quality of harmonious unity—the emphasis of the first set of lines would be much more expressive of a summer evening at Marlow than the emphasis of the second, because, probably, a gently undulating horizontal movement does signify the extra stillness of dusk, a sort of settling down of the day into night, a slight hush and the end of work.

We might, therefore, say that "significant form" implies emphatically form in which the machinery of beauty works hard and very elaborately at a great deal of material, in which the force of its harmonious unity is exceptionally notable and where there is apparent much repetition together with great balanced conflicts of rhythms and a crashing climax. But form which has beauty with significance attached to it in the sense which I propose to adopt here, can work its machinery with equal vigour but is also inherently expressive of the chief attribute of its subject. It employs, so to speak, a machinery which emphasizes the points of this attribute in the fabric which it embroiders.

Significance in architecture is then a matter of emphasis and selection, with the object of giving character to the appearance of vital stability in a building. Beauty without character, without a slight element of unusual emphasis, is liable to be dull. Bacon, going even further, said that there is no excellent beauty which has

not some strangeness in proportion: and it is the slight touch of surprise perhaps, the indefinable attraction of the not quite expected, which wields the most powerful charm over the human mind.

Now there are degrees of significance given to compositions in architecture which are dictated by the nature of the work. For instance, a building like a factory warehouse, which is entirely practical, is hardly expected to offer more pleasure to the eye than what is offered by good proportion and a general look of quiet regularity. We do not wish it to attract our attention by reason of any emphasis in the arrangement of its lines declaring a definite and interesting character; for we know that the purpose of the building is entirely utilitarian. Thus the most we expect, in this department of art, from such an edifice is perhaps a little stress on the composition of the main entrance or on any portion of the building which is clearly seen and helps, by contrast with the plainness of the rest, to accentuate our impression of its admirable restraint. On the other hand, and in extreme contrast with this, is the case of a monumental building like a national opera house or a great votive church. In these we demand much more than ordinary good proportion: we expect an expression of character in the significance of their lines as clearly evident as that factor can make it, without going too far into the employment of deliberate symbolism.

For that is the principal danger: too much significance means over-emphasis. That involves too great a distortion of the elements of the design affected and is thereby bound to reduce the essential look of harmonious unity. It may be discovered in some of the baroque buildings of the eighteenth century—especially in Germany. Here the forms are distorted and twisted and bent even on plan to such a degree that, though we appreciate the liveliness of the composition and its achievement of an appearance of happy levity, the strain on the essential factor is sometimes too great and there is a loss of that effect of repose we expect to enjoy from its presence.

On the other hand, too little significance tends to produce an effect of admirable dullness, like a beautiful but uninteresting woman. There is a lack of charm about a building which, however well it is proportioned, offers no hint of an enticing character when we expect it to do so. The natural reaction from late Victorian over-ornamentation and shoddy richness, which has appeared in some of the latest London office buildings, illustrates this. Their excellent tendency to revert to an effect which relies on the just arrangement of very straight lines enclosing well-proportioned spaces and very little more is, I suppose, a conscientious attempt to "express" the steel construction underneath. However, we should remember that any use of stone encasing steel is a form of sham and that it might be well if these buildings some-

times looked a little more intriguing. So we may conclude that, whereas significance is a part of the æsthetic pleasure we derive from good-looking architecture, it should be not only of the character which the object of the building demands, but it should appear also only with that degree of force and intensity which we should expect in such an edifice. That is, the adjective must be right and the force of its qualification properly controlled as well.

In the Loggia Bernarda, again, there is, I think, a shade too little significance. As it is a work of Palladio, the supreme classicist, we are prepared for a look of correct behaviour, a hint of the text-book, a touch of the great drawing-master. Yet every feature in it is so exactly right, we experience perhaps a slight longing for a little distortion or extra emphasis somewhere. It is quite inconceivable that we could discover in it anything funny—in the literal sense of that epithet.

II

The matter which now demands our attention is the rather elaborate one which concerns the application of significance in architecture; not so much the question of what it is, which I may have made partially clear, but the question of how it acts in the performance of its office. It is a matter dealing with architectural forms and involves us in a preliminary analysis and

classification of them. With this object, let me offer the following table:

1. Forms which are directly attributable to the demands of convenience.
2. Forms which are directly attributable to material or structural necessity.
3. Forms which are fictitiously structural.
4. Forms which, though originally derived from material, structure or necessity, are used decoratively.
5. Forms quite unrelated to material, structure or necessity which are adopted, usually from symbolic motives, for ornamental purposes.

Now I have put them under these headings for this reason. There is in each category a difference due to the varying degrees of adjustment they postulate between the element which fulfils the practical necessity in architecture and the factor which I called the desire for beauty. This, the reader may recollect, is the function of architecture I am trying to expound. For the forms in the first category *must* be adopted, whatever they look like; those in the second are usually chosen for reasons of common sense and can be made to look well; forms which are fictitiously structural are those which we delight to adopt for the opportunity they provide for the creation of beauty, without seeming to overstep much an appearance of structural realism, while those in the fourth class are such as we adopt at the risk of deceit and condemnation, but eagerly for their decorative value when transposed from their original function to another unrelated to it. They

are forms—usually of detail—which, though they had a structural origin, are so pleasant when re-used in the material in which they were born, that they please us immensely when deliberately applied with discretion to the work of emphasizing the more truthfully set lines of a composition. They then become pure ornaments and their configuration is guided only by the nature of the material of their origin, unlike the forms in the fifth class which are based on wholly abstract shapes possessing an innate and potent tickle for the eye and have no origin except in the flourish of a pencil in antiquity.

Let me give instances. To begin with, the interior of any good modern cinema-theatre presents to its patrons an absolutely uninterrupted space between them and the screen. There *must* be no supports carrying the upper galleries, otherwise some one's vision is bound to be interfered with. Hence these interiors are nearly always wide and spacious rooms; and in drawings of their plans there is never an indication of any break in their perfect vacuity. The plan of such a room is therefore an architectural form in my first category, for its shape is dictated solely by convenience and the demands of business, even if it is much more difficult for an architect to make such a space attractive to look at than one divided, like a church, by rows of columns; his difficulty being clearly the scarcity of any elements to repeat, the impossibility of creating a lively

balance between two walls far apart and the partial futility of forming a climax with the proscenium which, with exhausted eyes, we are only supposed to see between the features of the programme. But up to the present, of course, most cinemas look like other theatres in the same way as early motor-cars looked like landaus. That is a matter of development.

Two other instances of this type occur to one: namely, the high walls uninterrupted by windows which the lighting and accommodation of a picture-gallery necessitate, and the almost non-existent walls, apparently made of glass, which the modern shopkeeper demands with perfect justice. Both offer problems of incredible difficulty to the architect, but both have to be met because they are again dictated by convenience and business. Like the vacuity of the cinema-theatre, the blankness of the gallery wall and the glassiness of the shop-front translate themselves on an architect's drawing into definite shapes which are fixed irretrievably on his paper. They are not forms which he can play with at all and offer, therefore, no scope for the application of significance. He is even fortunate if he is able to make them reasonably well-proportioned. Hence, for the moment, we may rule them out of the discussion.

Let us consider, therefore, the other four types of architectural form which I have tabulated. Take the second one—those which are directly

attributable to material or structural necessity. A panelled door, I think, is quite a good instance: a keystone is another and a flying buttress is a third. Now in the case of the door, its design is attributable to both material and structure; for wood is more easily put together, to form a flat board say 7 feet by 3 feet, with a frame of styles joined by a web of thinner panelling between, than by any other means. The practice of centuries has proved it. So, whatever are the proportions between the styles and the panels and between the panels themselves, the door can be quite a good structural form because it is *strong*. If, however, the arrangement of its lines is pleasant to look at owing to the careful adjustment of its component shapes, and if the mouldings round the panels give just that touch of tight exhilaration we expect them to give in relief to the flatness of the wood, the door is then quite a good architectural form. It has a certain measure of beauty. Yet we are able to note that even if it is massively wrought in mahogany, delicately carved, furnished with gem-like ironmongery and painted, on its panels, by a Master, it is difficult to think of it as a form to which we could attach any particular significance. I know, I admit, some very large and very tall doors, with high thin panels and the most elaborate ornament; but they have merely a rather stately look in keeping with the rest of the apartment to which they give access. Joseph Sheridan Le

Fanu [1] describes one to an alcove in which "there was, in its proportions and features, a latent discord—a certain indescribable relation, which jarred indistinctly upon some secret sense of the fitting and the safe, and raised indefinable suspicions and apprehensions of the imagination"; but that was to create an atmosphere of nightmare in one of his best ghost-stories. The most an architect of actual buildings can do is to differentiate, by the direction of their lines and the liveliness or placidity of their shapes, between the door of a café and the portal of a sepulchre. For a door is a thing we must have; it is, in fact, part of a wall. And if it is made of wood, it must be in a certain form corresponding to the nature of wood and its structural capacities. Common sense makes us adopt that form, and any other quite properly startles us because it suggests over-frivolity with one of the intensely practical elements in the vital business of shelter. Hence, though it is not quite so barren a field for play as the shop window, for instance, there is very little scope for significance in the form of a door. It is a serious thing.

As every one knows, the origin of keystones was the structural necessity to drive a wedge between the two top stones of an arch, to make the arch firm and rigid; and the ordinary shape of these keys is derived from the nature of their material—stone. They are still in my second

[1] In *Some Strange Disturbances*, 1853.

category, but they are details which are a little less definitely practical than doors. We need not have keystones, because we need not have arches so often as we must have doors. So this detail is a rather more ornamental form and it lends itself to the application of significance more readily, therefore, than the other. Architects know how valuable is this small element in the vitality of a composition, and how much character a well-shaped and richly carved keystone may display to the advantage of its surroundings.

Thirdly, the flying-buttress. Any one acquainted with the French cathedrals has realized the value of those perfectly practical details in the production of an effect of conflicting lines and of contrasting light and shade, perhaps unequalled by any other architectural form. Invented originally to carry the thrust of the nave vaulting right across the side aisles of a church and so to the ground, they were developed in the fourteenth and fifteenth centuries to an almost terrifying point in structural possibility. And they are very significant forms. The earliest type, which is low and heavy, short in the span of its arm and massive in its anchorage to the outer walls, produces an unfailing effect of grip on the earth—a sort of clawing tenacity; while the later forms, like those of the choir of Beauvais, with their towering masses of stone, their almost steel-like arms a hundred feet above the ground and their complex pinnacles which seem to finally peg the

thrust to the ground (which they actually do), have that significance of grip due to their natural function and as well, I think, a kind of secondary suggestion of protectiveness, a sort of noble guardianship of the inner shrine. A walk round the chevet of that cathedral, in the cold moonlight of April, impels this thought. These prodigious towers, standing in a great arc round the sanctuary, motionless in their black and silver exaltation, repel you with their strong dignity; you are thrust away from the delicate shimmering fabric of the choir within, and thwarted in your approach, though enchanted, seek refuge in a porch from the strength of their frightful significance.

Now this brings us back to an important point; for it is again apparent, as I suggested in connection with Palladio's basilica at Vicenza, that there are two degrees of significance. There is that which the flying buttress offered first, namely, a significance of its natural function—what Mr. Scott,[1] I think, calls "constructional vividity" (in contradistinction to structural reality)—that is the provision of a look of performing, with a sort of athletic ease, a structural operation which we like to see in the right place in a building; and there is the second kind of significance, more analogous to that of music, which is due to the general association of ideas and has little or no relation to the actual function of the form.

[1] In *The Architecture of Humanism*.

For certain forms themselves, in a quite abstract way, carry with them sundry associations, hints of natural inclinations and a dim recollection of things we have felt or seen or even done; just as the mere sound of thunder is sublimated into an idea of monstrous power and undefined danger in the minds even of those aware of the fact of no danger; and in what I might call the advanced architectural forms this second degree is more easily discernible.

Let us take still another instance. Imagine a low hall about 70 feet long and 30 feet wide and only 9 or 10 feet high, probably in the ground floor of a palatial building. Imagine that, for structural reasons, the ceiling has to be supported by two rows of thin cast-iron columns, quite straight and plain. We wish to rectify the look of this; and to do so we case them in wood or fibrous plaster; that is, we emphasize their forms to look like much stronger but more elegant supports to the ceiling. Imagine them, therefore, transformed into pillars of the Roman Doric order. Now the point is this: if we make them perfectly correct according to the known patterns of that order, we shall undoubtedly have good-looking columns, but they will be a little characterless. For this reason: the hall is very spacious for its height; the ceiling is therefore the dominant feature in it. We feel it threateningly above our heads wherever we stand. Hence a column which looks as if it just supported the

ceiling is not enough; we demand a significance in its form of muscular resistance to the weight, a look of continuous burden gracefully held with vivid elasticity. So we make some other very slight emphasis on the lines of the column, such as a small increase in the enthasis (or bulge) of its shaft, and a very slight distortion (by greater spread) of the usual capital and base.

Such a column is a good instance of the kind of significance, in the form of an architectural detail, which we like because it has a character which we expect it to assume. The column, actually by its iron core and apparently by its form, supports the ceiling delightfully. Its function is so sure and its form so apt we experience an access of relief when we see it and walk from one end of the hall to the other with perfect serenity.

That is the first—the functional kind of significance. The second or associatise sort is also just perceptible in the two rows of these columns. It is provoked, in a small degree, by their actual repetition, which invites us to move forward happily, each pair heralding our approach to the next and, like elms in an avenue, leading us on to the greater glories of the house beyond. There is a faint significance of graceful invitation and a dignified ushering onwards.

Perhaps, however, it may be said that these columns, with iron cores and a false casing, are examples of my third category of architectural

forms. They are, I admit, partly fictitiously structural, and for that reason, will form an admirable link with forms which are wholly so.

We have met one or two already in the angle buttresses of the dormer window from the Musée Cluny. The supports at each side of that detail have been developed into that form which suggests additional support and strength, because such an emphasis or distortion proclaims their function and stimulates our appreciation of their look of strength. A mere increase of size of the jambs at the base would create a form in my second category, but the fact that a buttress has been put there which does not really abut anything, though it looks as if it did, creates an architectural form which is fictitiously structural, and, at the same time, both pleasantly proportioned and strongly significant of support in what I have already named the functional sense.

Similarly, all the columns or three-quarter columns on the great shop-fronts of London are forms in this category. Usually they look as if they supported the parapet and roof above them, and sometimes the appearance of doing so gives us pleasure. Nevertheless, nothing of the sort actually occurs: they are, in reality, purely adhesive. Moreover, though we know the whole building is a construction of steel and the stone a pretty veneer, we secretly like the look of possibility in the fictitious structure imposed on us. We prefer, at this stage in our development

of architectural forms, to cling to the tradition of stone fronts, even if they are false and even if we know that business and shopping could be carried on with equal if not greater comfort in structures completely formed of steel and glass. Probably we are right. It is a question of propriety and respect for the appearance of our streets; and we are most right (though rarely successful) in imitating the possibilities of stone construction applied to steel by emphasizing a little a look of tension, rigidity and lightness.

Another and popular example of this class of form is the dome of St. Paul's Cathedral. The cupola which we see from the street is entirely untrue; it does not support at all the lantern on its summit. It is merely an emphasis—an expanded sheath—of the inner cone which really performs the task. Wren, in creating it, made something wholly fictitious and told, quite deliberately, an architectural lie. Yet could any shape below the lantern look as if it supported it so admirably as this? Could a straight pyramid or any other curve look both so vital and so stable as this jolly lead balloon bulging but not bursting with the weight of the mass above it? It is a most commendable example of a possibility in structure very justifiably imitated. It is a delightful fiction, invented and wholly untrue. Moreover, we enjoy the form of this cupola not only for the adequacy of its proportion in relation to the whole dome and not only for the charm

of its outline, but as well for its suggestion of mountainous rigidity and grandeur, its look of a supreme and culminating summit guarding London with a fat maternal benignity. That is its higher significance.

Art is of course an affair of deceit. We must realize that. It is a matter beginning with slight emphasis of the natural form, increasing into distortion and ending with actual transposition of form for the purposes of beauty. Now a species of animal merely reproduces itself. They —the animals—cannot do more than that. But man can. By careful culture, selection and emphasis of traits he can go farther than nature and breed a Derby winner. That is the mark of art and the very essence of its office. Where disagreement comes between men and between schools of thought and between the ideas of every period is in the matter of degree of emphasis, the point of propriety in deceit and the morality of a sham. I do not intend yet to go into these disagreements, and my object now is only to clarify, if possible, the various known degrees of emphasis. We come then to my fourth and fifth categories in the table of architectural forms.

It seems strange sometimes, but it is certainly true that a modern architect, in nine cases out of ten, is expected to build a church in a mediæval manner. I imagine this is because Gothic forms, gloriously developed under the inspiration of the Church in the thirteenth century, have become

deeply associated with ideas of religious devotion. The very length of the vertical lines of a mediæval nave or the "soaring" of a spire are inevitably significant of uplifting emotions. It is impossible, in fact, for a man with any feeling to disregard this sense of something celestial when he sees the flank of Bourges Cathedral or stands in the transept of York. He can neither check a feeling almost of worship in the dark morning light of Westminster Abbey nor resist the heavenly attraction of Lincoln's nave on an evening in September. Yet this is not pure sentiment: my point of view is not quite mid-Victorian. These are merely examples of significance in certain forms through association with ideas which may be considered sentimental in their origin. Yet the sentiment was true when the forms were evolved and is so still when they are copied to-day in buildings used for exactly the same purpose. Doubtless, then, we are right in putting up modern churches in mediæval ecclesiastical forms to a certain extent.

We were wrong, however, I think, to dress up the Tower Bridge in the same forms. There we have all the mediæval vocabulary prompting in our hearts, let us hope, all the noble virtues of a completely catholic period. Its aspiring lines and its battlements and pinnacles inflame us, let us presume, by the significance of their forms, into an ardour of piety and chaste chivalry. But no! that was not the intention of the builders. This

bridge is to proclaim the greatness of the port of London, the capital of Britain, mistress of the seas; it stands for the gate of the City, the centre of the maritime world—a very admirable intention, aiming at a significance of architectural form comparable to that achieved by the Vicenza basilica. Yet the Italian building carried the achievement through by using the natural forms of its own time and the Tower Bridge had to borrow forms associated with another sentiment which, because it was originally uplifting and noble, was therefore useful for the purpose. It is therefore an instance, not of fictitious structure, but of structure transposed for decorative purposes and doubly false through borrowing the wrong significance. Unfortunately, too, the result is not very decorative.

Thus we see that the element of significance in architectural beauty is one which may lead to disaster if overdue importance is attached to its function. When it is merely a concomitant of the essential quality of harmonious unity in a design and can be sensibly perceived as an additional exhilaration to the pleasure which the other gives us, there is safety for the architect. But if he puts significance first and, as well, borrows a set of forms with a significance not properly attributable to the object of his building, our taste is certain to be offended not only by the impropriety of his adoption, but by the fact that the over-emphasis which it demands detracts

from the force of the harmonious unity which we expect above everything. Hence the terrible plainness of some nineteenth century Gothic churches and the look about them of a borrowed personality. For they are built in forms copied for the excitement which the significance of their originals gave, and not primarily for their appearance of vital stability.

Nevertheless, it is not quite true that, whenever a form originally derived from structural or material necessity is made use of in a decorative way, disaster is bound to occur. If the thing is done with discretion, it can prove a great asset in architectural composition. It may not have occurred to us, perhaps, that the square top of our dormer window is one of these. The gable end of triangular shape is a form in my second category because it is the natural termination of the pointed roof behind it. It is a structural necessity made good to look at. But there was no necessity at all for the angle buttresses to be carried up seven or eight feet above the base of the triangle, or to be joined at the top by a miniature parapet through the interstices of which we quite placidly perceive the sky. This is clearly a borrowed form though originally a constructive one. It is applied for the sole reason that it looks well where it is; and how much less interesting the window would be without it! Much of the vitality we discovered in the design would be lost, and all the lively intricacy of the tracery

connecting it to the gable would be absent. In a word it would be a window of much less character.

That is what I mean by using these forms with discretion. When they are employed thus, as an extra elaboration or emphasis of another more important form which is a structural necessity, they are admirable. I might have said they are perfectly legitimate; but I do not intend to try to enunciate laws and am only interested in what is effective for our purpose—in what is successful in the production of good architecture. Besides, in art any form of deceit is legitimate, as I have already indicated, so long as it increases the æsthetic value of an object. The severe demand for architectural "truth" which began to make itself heard about forty years ago was based on a fallacy. It arose from the apparently genuine but really illogical argument that, unless a structure actually did what it appeared to do, the architecture of that structure was bad because it was untrue. A motto was even invented by our grandfathers—"design in beauty, build in truth"—to which, owing to the conflict between its aphorisms, I have found it difficult to adhere in the fluster of a modern practice. For, to fulfil both these injunctions at the same instant, postulates an opportunity which very rarely occurs. The achievement sometimes is made, as it were, by accident when a perfectly utilitarian structure, seen from a certain point of view, is

discovered to possess a measure of beauty in the arrangement of its lines. I have noticed, for instance, in such an unlikely place as Nottingham Station a composition of lines formed by its steel columns, bridges, staircases and platforms in perspective which would have given Piranesi considerable pleasure. The effect may have been helped by semi-darkness and smoke, yet it was beautiful in a hard and characterless way.

The interior of a station, however, is really an engineering work; and, whenever architecture tends to become engineering, the quality of truth is more apparent, for the simple reason that this occupation has a much more practical object than ours, and we do not expect to discover in its products a rich and subtle beauty. We might as well expect railway guards and porters to dress like beefeaters, though the common sense of this industrial age would ridicule the idea. It is unfortunate that the same common sense does not deride, as it should, the borrowed plumes of some of its notable buildings.

As to the forms in my fifth and last category, I need say very little. They are all such as are wholly unrelated to structure and are therefore blatantly ornamental conceits. They do not pretend not to be, but borrow their shapes quite plainly from any convenient detail of the natural world, sometimes from a leaf, sometimes from a shell or a symbolic crystal pentagram, often because some quite abstract shapes, like the curve

of an Ionic volute, have an inherent fascination. They appear very rarely in structural features of a building and the only very notable instance of this is the Greek use of caryatid figures instead of the ordinary shaft of a column. They appear principally in the ornament of a composition where the effect of their shapes has a definite rhythmical value at the points where they are placed; and if this effect is not apparent, the ornament is clearly bad however marvellously carved. An excellent instance of this is the placing of the small shells on our dormer. Each of them, as I have shown, has its own little function in the creation of a look of vitality. They assist, in their small sphere, the liveliness of the design by their conchoidal frilliness, and possess, on their own, a kind of flickering significance which we like.

III

Now in our study of the application of significance to architecture we have, up to this point, contemplated forms which, in composition, convey an idea either by an appearance of weighted mass or of stressed direction; that is, purely architectural forms—or the lines of simple building arranged in such a way that character is given to the design by points of emphasis within its harmonious unity. I have talked about columns and doors and buttresses, all simple structural elements of building; but in

the case of the fifth category of forms by which significance is applicable, and when, especially, I mentioned the shells on the dormer window, we had gone a little beyond the scope of pure building and were on the brink of another but related subject—namely, the architectural use of sculpture. This and the employment of colour are the two great auxiliary means by which an architect can completely fulfil his desire for beauty, and at the same time give the maximum significance to the appearance of his work, even if, to do so, he goes outside the province of his own occupation and borrows, under conditions, the products of another. Let us consider, then, the architectural use of sculpture first.

It is more difficult than it seems at first to define exactly what this really is. There is, as usual, a question of the proper use of words. For if the reader will look at the photograph of a part of the south transept of York Minster, which is here reproduced, he will notice firstly that the masonry of the two arches partly visible has "ornament" on it which is usually known as "dog-tooth". Secondly, he will observe the restrained and lovely enrichment of the capitals with their interlacing leaves and stalks; and he will rightly call this brilliant "carving". Thirdly, he will notice, just round the corner of the two columns and springing from the spandrils of the arches, the bases of two large brackets or corbels, and, as well—but rather dimly—he will

PLATE III: YORK MINSTER

see, at the foot of the great column at the left, a niche with a pedestal and canopy very richly wrought. These last three items he will doubtless class as "sculpture"; and, moreover, were he to imagine the figure of a saint standing in that niche and properly completing it, I do not doubt that he would call the image "statuary".

Thus there are at least four kinds of architectural sculpture or rather degrees corresponding to certain points in its development from mere enrichment of the lines of masonry by cuts and dots and wriggled surfaces to the free and individual use of the human figure; and the four possible descriptions of them are really synonymous and, for our purpose, may be reduced to the one of "sculpture" for this reason; each class or kind or degree in development is cut in stone or marble or wood with much the same instrument, whether it be a little beaded moulding round a cupboard door or an apostle's statue on the summit of a dome. Each member of each class is subservient, in good architecture, to the composition of the structure, and the ornament is woven in its rhythm. It is only a richer emphasis of the main forms, more intricate and subtle than the naked shapes of building, yet always dominated by them. For architecture, with the help of sculpture, is like opera; words and dramatic intensity are given to its song.

Look at the York Minster detail. Each of

the items in its ornament I mentioned performs a part in the business of emphasis. There is, in this early English work, a look of mastery of form combined with great restraint checking the least exuberance. It displays an almost unequalled knowledge of where and how to place the points of emphasis; it elaborates itself without disturbing the simple purity of its harmony and is as classical as Greek work in the chastity of its richness. The dog-tooth ornament, for instance, is here a repeated form arranged in a balanced manner at each side of the principal member of a group which forms the arch joining one column to another. This pair of dotted lines sandwiches—so to speak—the bunch of six or seven plain ones running up between them; it brings them into a tight cluster and emphasizes it with a double clasp of pointed gems. The thing looks dressed more richly than the groins of vaulting which span the aisle; and justly, for the arch towards the transept is more often and more clearly seen.

Then the carving on the capitals has a character of exuberance deftly checked which pleases us because it looks as if it should occur just there, where the downward tendency of the arch lines meets and is held by the stronger upward push of the shafts below. The actual impact comes on the hard, smooth, dark abacus undulating in a gentle horizontal line round the summit of the column; and we feel, too, that the curve of the

capital below the leaves is strong enough itself to cushion the shock; yet the stalks and leaves, springing as they do with a sudden jerk from the base of the inverted bell, signify this shock and, like the spray from a wave breaking itself on the hard shore of a sloping beach, the petals are tossed about and curled and blown back in an uneven but apparent line. Yet, with all this in so small a compass, note how the liveliness is just enough and not too much and how no leaf or petal of a leaf projects a quarter of an inch beyond the controlling radius; and note, above all, how the exquisite proportions of height of abacus to capital, and capital to necking and foliage to naked bell are displayed with perfect clarity. Callicrates himself would have enjoyed this detail.

It is just possible, I think, to see enough of the two carved brackets on the left side of the columns in this photograph to be able to discuss them. The object of these two tall pointed corbels is again one of emphasis. They are placed on the flat surface of the spandril wall to balance, as it were, the vault ribs which spring from the capital on the opposite side. This difficulty of the flatness of a nave wall above its columns when compared with the light and shade of the vaulting over an aisle beside it, and the lack of balance in the appearance of the masonry when the series of arches is looked at from such an angle as we have here, is one of the most

noticeable in Gothic architecture. Here it is overcome properly—by the architectural use of sculpture; but what we have to note is the great difference between this detail and the dog-tooth ornament, as regards treatment, and the slighter difference between it and the carving of the capitals. Both because it is far from being a mere enrichment of the lines of masonry and because the corbel, carrying nothing important, is less functional in the scheme of structure than the capital, its treatment is a much fuller and richer matter than that of the one and rather bolder and more unfettered than that of the other. There is a kind of loose fluffiness about the foliage on these corbels which distinguishes them from the tighter and more clipped growths on the capitals. Yet it is not entirely unrestrained, for the shape of the corbel had to conform to the thin triangle of the spandril from which it springs; it is to that extent controlled by structure; and, as well, in order to satisfy our desire for balance between it and the group of vaulting ribs behind, it had to project in a line corresponding to their spring. Hence the leaves, though they are larger and more free than those on the capitals, are, like them, held back both by a series of increasing radii and by their conformity to an enclosing but invisible curved line exactly similar to the steep rise of the outer vaulting rib. Moreover, we should note how this feeling of an upward spring is brought out

by the great length of the stalks always stretching higher in an increasing reach from the lowest tier to the topmost. It is these delicate adjustments of four heights—an emphasis from plain equal repetition—which gives this feature the significance required.

Now consider the niche at the foot of the great group of shafts across the transept. Here is an item in the composition even less necessary for optical effect and much less controlled by structure than the corbels we have just examined. It is, in fact, merely the decorative treatment of a spare piece of wall between the back of the main column of the central tower of the Cathedral and the side of the arcading of the transept. Yet it is not valueless, for without it that great height of wall, thickly fluted by the members of the column for half its width and otherwise quite plain, would have looked too large and out of scale with the other portions of the building. Hence the use of architectural sculpture to relieve its simplicity and to counteract the wholly vertical effect. The problem was so to treat a piece of wall 3 feet wide and almost 50 feet high with just sufficient emphasis in places that it did not detract, by the significance of its shapes, from the more important claim of the great shafts adjoining it. Extreme contrast was thus essential; hence the minute and delicate thinness of the drawing on the stone; and hence the five quite strongly marked lines, arranged, of course, at

intervals in the subtlest proportion. For though we are really studying the niche, we must begin with the whole feature from the floor to the springing of the vault. The niche is only its focal point; and if we look at it, we feel the eye carried up by three diminishing thrusts—three springs, as it were, checked by the tiny arcades and pinnacles which appear to be growing on the wall towards the top. It is these halts in our vision which produce the contrast to the smooth uninterrupted stems of the four tall shafts on the right; and it is an example of what I called the look of how lines seem to go as compared with how masses seem to stand. There is an upward emphasis here—an unequal pulling from the top. Moreover, we have, in this whole feature, both the employment of architectural sculpture through the thin moulded lines of an immensely elongated arcade in a way analogous to that of the dog-tooth opposite; and, as well, we have in the niche itself a much higher class of its use, more advanced even than the corbels, in which the sculpture had no other purpose than to appear at that point very thick and elaborate. So the canopy and pedestal, which together make it, are an agglomeration of shapes which happen to be copied in a microscopic way from architectural forms but might just as well have been imitated from anything in nature which gave a dark and lace-like effect. Two masses of concentrated tiny intricacy casting two shadows and carved so that

the one slightly suggested support and the other shelter was here the task of sculpture. Being as accustomed to architectural forms which provided support and shelter as to any others in the natural world, it chose those diminutive columns and buttresses, arches, cornice and parapet; then, with half a dozen blocks of stone, hewed them into significance.

My statement that in all good architecture the sculpture is subservient to the more naked lines of the shapes of structure is admirably upheld by the example these details at York provide. As Ruskin pointed out, the first function of such sculpture is not to represent the things it imitates, but to gather out of them those arrangements of form which shall be pleasing to the eye in their intended places. That is, the intricacy of a human figure, animal, flower or leaf should be such as will increase the vitality of the whole architectural scheme and emphasize its stability without confusing the general look of harmony. The sculpture is composed with the structural forms, like these small instances at York, and is not applied as an afterthought in the hope of shrouding or correcting their deficiencies.

These are the conditions under which an architect goes out of his own province and employs the products of another. And if, again, we imagine that niche completed by a figure of a saint, is it conceivable that such a figure could be in any attitude but standing upright, almost on

tip-toe and of a very thin and grave ascetic mien ?[1] Surely it would have to be like those chaste statues crowding round the entrances of Chartres Cathedral and stretched to an elongation far beyond human possibility, yet enhancing wonderfully, by this so unnatural distortion, the general significance of spiritual gravity ; and essentially unlike those ecstatic figures of apostles, martyrs, kings and prophets on the baroque churches of Italy and Spain, though they too, in their places, are often singularly successful in heightening the effect of clamant religious enthusiasm and counter-reformation in the architecture of the churches they adorn. Placed high up, often on the apices of elaborate structure, their gesticulatory attitudes afford an outlet—so to speak—for the steam engendered by all the vivid intricacy underneath them ; and in some of the whirling compositions to be found in the buildings put up in central Europe in the eighteenth century, it often seems to me these figures are quite vital to their unity.

Yet countless buildings suffer from the improper or the over-use of sculpture. There are those extreme instances like the Rattenfangerhaus at Hameln, a product of the early German Renaissance, which consists of one vast gable three stories high entirely covered with banded and studded rustication used as ornament to such a degree that it is quite difficult to discover the

[1] Since the photograph was taken, a statue of St. Cuthbert has been placed in this niche. It is a short and stout figure standing on a thick pedestal.

windows in the mêlée; and the outline of the gable itself, unlike the suavely curved Dutch and Flemish types, is stepped and bitten and twisted and tossed in ringlets so that it has no more line than the untidy fringe of grass up the shoulder of a wind-swept sand-dune. Then there is the Schloss at Heidelberg, which stands magnificently above the town and, I admit, looks well by moonlight, and better still illuminated. But the architecture of this building entirely fails through its subservience to the intricate and rather coarse sculpture which covers it. The walls are screens for the display of carving; there is little evidence of thoughtful design, no unity and little significance beyond that of wealth. The Friedrichsbau, considered strictly as architecture and apart from age or cleverness in its conceits, is less an example of the good arrangement of the lines of building than the happy placing of sugar on a cake of stone. Many purely ephemeral exhibition buildings have shown much higher art than this.

Yet what an asset is the use of sculpture to an architect! What would the Parthenon have been without it? Or the greater buildings of imperial Rome? Rude sculpture growing sturdily on their massive structure gave the character they display to the early mediæval churches; and, in the thirteenth century, at the climax of religious art, no building—even the smallest priory—was ever considered finished without the use of sculpture in a thousand different forms; until,

as at Reims, the whole edifice looked carved rather than built, such was the knowledge possessed by the mediæval craftsman of the relation of sculpture to structure and of ornament to line. Again, at the Renaissance in Italy this art was so encouraged that building itself took on—not a carved—but rather a chiselled nature and the smaller works became deliberate monuments, clean, sharp, finished, smooth and softly lustrous like the chaste marble of a recumbent effigy And in later centuries too, that English master, Alfred Stevens, like Michelangelo, could think with equal ease in purely architectural lines and human shapes and all the little forms of ornament. He used them simultaneously to make one living composition, not quite architecture and not quite sculpture, but perhaps something higher than both—the pure creation of a memorial in stone.

The restrictions in the architectural use of sculpture are perhaps obvious, but I might mention some of them with advantage. For instance, it is undoubtedly a mistake to spend much money on its employment in a building facing north. Sculpture, like architecture, especially when it is small and intricate, demands ample light for the display of its lights and shades. Heavy carving on a dark roof is wasted, and conversely, when a ceiling is over-enriched with plaster ornament in high relief, it will waste the light it is supposed to spread about the room. Again, for practical reasons it is a mistake to put

delicate sculpture in exposed positions; its very nature demands some degree of protection from the structure it embellishes—in the corner of a spandril for instance, or under the arc of a tympanum or the projection of a pediment. Its placing in these positions, too, emphasizes what I maintain is so important, namely, the dominance of purely architectural forms over those of the other. The actual treatment has a visual effect and aids our appreciation of the character of the work. For there is a kind of sympathy between architecture and sculpture discernible in all great buildings, and a mutual enlightenment. We find it in the Parthenon, where not only is the square-like rigidity of its lines reflected in the spacing and shape of its figures, but the latter are made to coincide with the lines of the columnar structure as regards optical effect from below and in perspective. Some of the mediæval masons, too, realized the value of this subtle agreement, and made their figures, sitting high up on a façade, almost stand and lean forward on elongated thighs, thereby maintaining with infinite care the delicate harmonious unity of their work, when looked at from the street. Thus all those saints and kings, birds, animals and devils on a great French front like that at Amiens are never free and individual outbursts of a sculptor's skill, but, arranged in lines of finely varied shapes and sizes, and invisibly distorted if required, they grow out of the structure, live in its lines, emphasize its

mass, stress its significance and so enrich its character. These myriad figures, under the guidance of the master-mason's mind, follow the very same laws which architecture follows and accompany its tune. Like the lines of building they appear in repetition, then as balanced groups and finally in the climax of a great knot of focal figure-work surrounding an apotheosis or a vision of the Sacrifice of Calvary.

IV

Colour is the other aid to architecture in the achievement of the maximum effect of significance. It differs, of course, both from architecture and from sculpture because it deals with surface only and not with the form of masses. Nevertheless, it is true that a large, strongly coloured surface with bold outlines can play a part in composition almost as important as that of a big architectural form or a massive group of statuary. A high-pitched red roof on a grey cottage strikes the eye, in fact, before any other feature of the building. It has a weight of its own: colour emphasizes and upholds the æsthetic function of building forms.

Let us, however, begin once more by defining or rather clearly understanding what we mean by the simple word "colour" when it is used in relation to architecture. To begin with, it is apparent that every building *is* some colour, just as every object on earth which we see, if fully

represented in a sketch, would be painted at least one shade of colour. It cannot be escaped; and a ruined castle, for instance, has quite a number of hues. There is the natural grey of its stone or granite due to their geological formation, and this is varied in places by the green of lichen or by stains of weather; there may be, too, a warm red shade in a stone or two where iron has crept into their composition. Then there is the pale gold flush over those parts of the tower where the sun strikes it and the grey blue of its shadowed places. There may be, as well, reflected colours where a broken window-pane catches the light green-blue of the sky; and finally, there will be perhaps a door at the foot painted by some modern a maroon colour or even chocolate brown. As we look at this castle we see an arrangement of lines of tumbled building forming masses whose surfaces are coloured either by their chemical composition or their exposure to weather or their position in relation to light or by paint. The matter is further complicated, too, by the fact that buildings change their colours in different lights and take on other shades with age.

I think we can best clarify this by dividing colours firstly into those which are apparent and those which are real; for, as I have suggested, a building may *be* grey but *look* gold in a sunset, and a purple marble wasted on a basement floor may look merely black. The question of apparent colours in architecture is of course not so

important as that of real colours, yet in decorative matters and the interior finish of rooms it is sometimes a difficult one. I have known the cove of a ceiling painted a delightful pale pink look that colour on one side of a room and a feeble pale orange on the other. This was owing to the lighting of the room and involved using deliberately an apparent colour on one half of the ceiling gradually merged into a real colour on the other.

It is the real colours, however, which concern an architect most and these can be quite obviously divided into those which are specific and those which are applied. By specific I mean actual inherent colour of a material used in building, and applied colours are almost wholly such as are due to paint or stain or dye. We all know the specific colours of certain materials—the red of bricks, the grey of stone, the purple of slate, the brown of oak, the yellow of pine and the white of statuary marble. Such colours are inherently peculiar to those materials which we commonly employ in building, and we accept the fact that they are so tinted in just the same way as we adopt passively those architectural forms which are dictated solely by convenience. It is a very rare thing to see a stone building in which any attempt has been made to alter artificially the colour of the stone: we leave that to the action of weather, smoke and time. In fact, we take some pleasure in most of the specific colours of

building materials, and the present age, at least, appreciates the warm russet of an old brick wall and the varied hues of a stone slabbed roof; though in the eighteenth century any appearance of brick was thought barbaric and it was shrouded always in stucco, imitating the nobler material—stone. The Greeks, too, even painted the Parthenon in a scheme of glaring colours in preference to the enjoyable glitter of Pentelic marble; and the early Victorians, aiming at an appearance of greater respectability, eschewed specific colour altogether and applied the shades of oak to deal and of marble to cement.

Nevertheless specific colours do count, and we choose stones and marbles, bricks and slates, which have value for their harmonious blend as well as for their durability. A roofing tile which "weathers" pleasantly is as much sought after as one which rejects the rain impenetrably. We put copper cupolas on buildings, knowing that in time they will be green and will form a jolly decorative "bit of colour" on a building which is otherwise a little drab. That is, we work for an effect in our specific colours, by relying on the natural action both of chemistry and time in preference to the quicker and more certain effects of pigment. That brings us, of course, to the point of this chapter on colour. What guides us in the choice of materials whose specific colours blend or in the selection of shades of distemper in a decorative scheme? Why is the interior of

St. Mark's at Venice so glorious and the colour of York's five lancets so gravely splendid ?[1] There must be a reason for the intoxicating effect of the chevet windows at Bourges and those "rosaces" at Amiens blazing at each other across the transept.

Now there has been some research into the theory of colour and its arrangement which seems to me to have produced some valuable thoughts. I recommend particularly Mr. H. Barrett Carpenter's work[2] to those interested in the scientific side of the subject and propose to try to present this idea of the basis of harmony in colour by asking the reader to visualize a diagram. Let him, in fact, imagine a clock-face. Let there be at XII, at the top, pure yellow, and at VI, at the bottom, ultramarine — its opposite extreme. Moving down the left side of the dial from XI, X, IX, VIII and VII to VI there will then be yellow, orange-yellow, orange, red, purple, violet to ultramarine ; and moving down the right side through I, II, III, IIII, V to VI again there will be yellow, yellow-green, green, green-blue, cyan-blue, blue to ultramarine. These names, I think, represent to us—they do to me, at least—definite colour shades, conveying in both cases a process from a light yellow to a very dark blue. We can imagine, of course, a light violet, but ordinarily we think of it as a heavy dark colour like the

[1] Especially before they were cleaned.

[2] *Colour*, by H. Barrett Carpenter. School of Art, Rochdale, 1915.

average petal of that flower; and there is pale blue, but after all that is really ordinary blue washed out. There is therefore a natural order of ordinary shades, and it will be found that colours in this natural order are pleasantly harmonious. The phrase "natural order" really means, then, getting darker in hue or shade of colour: thus a curtain in orange-yellow, orange and red in their ordinary accepted tones would be harmonious and quietly decorative. But if its colour consisted of the first two and a very pale light red, the effect would at once be discordant because the natural order of those three had not been followed. A little experiment or even observation will prove this to any one with a perceptive eye for colours and their tones.

Moreover, it will be noticed that in plants with flowers and leaves, and in Persian carpets also, that a second factor in colour design may be deduced with the aid of our diagrammatic clock—namely that of contrast. It will be found that pure contrasts are on the opposite points of diagonals: for instance, red is at IX and green-blue, which always looks well with it, is at III on the clock; and violet at VII is happily opposed by yellow-green at I. A composition in painting, or in fabric, or in mosaic, or even in architecture which is coloured only by shades in their natural order is nearly always a little dull, and though it appears harmonious and entirely free from discord, the eye asks for an element of contrast

to produce a feeling of balance, just as in the matter of harmonious forms in building we are unsatisfied without balance because it is essential to unity of effect. And, similarly, just as we demand a focus in a composition in building to thoroughly appreciate it, so do we expect a climax in a colour scheme to complete its harmonious unity—some flicker extra to the contrasting shade which blends the whole into one bright effect of colour rather than of intermingled pleasant hues.

We find an example of the fulfilment of these precepts in the inlay work of coloured tesseræ let into white marble so brilliantly developed by the Cosmati in Rome during the Dark Ages; and another in some of our own dyed stuffs in the elaborate patterns of which we often find a repeated design of twisted forms coloured perhaps in two shades of orange and a red, balanced by thinner lines of green, the same depth as the red, and "set off"—to use a popular expression—by small but sharp dots of a strong dark blue. It is the same in architecture too: a high rich and rough red brick wall with repeated windows in it finds its harmony in the darker shade of violet brick quoins and plinth and stringcourse, contrast in the faded green of its shutters and complete unity in the lightest cream of its thin sashes and thinner glazing bars. And there is, I recollect, a sense of this unity in the interior of Exeter Cathedral. There is a faint grey here

throughout the stone work, but varied in shade and tone. The columns are a strong, warm grey, the clerestory is clearly cream-coloured and the vaulting has a shade of golden-orange in its texture. The colour of the columns is repeated and connected by the silver of the great east window, and the pinker cream of the clerestory is balanced by the pale olive green in the windows piercing it. All this light and delicate effect, as well, is contrasted by the rich dark slabs of colour on the chancel screen, repeating the other elements but on a lower note, each throwing up the other and bound together, though perhaps not quite successfully, by the dark focus of the organ.

Thus a composition in colours, if it is to be successful, is like a composition in the lines of building: it is based primarily on an appearance of harmonious unity. The introduction of significance or the suggestion of character is pointless without the fulfilment of this first essential condition.

Now, the manner in which significance is attached to an architectural composition by colour is based on an understanding of certain characteristics which we attach quite instinctively to the various hues. These are suggested to us either through the association of ideas or they have evolved from very ancient instincts arising from primitive impulses. In any case, it is perfectly true that a general acceptance of these characteristics of colours exists, and most people admit

their implication. Red, for instance, is usually an irritating colour, violent, strident and exciting. That is, it would be inconceivable to paint the walls of a reading-room in a learned club bright vermilion: the effect on the members would be unbearable. Yet in spots and small patches this colour is the most valuable, either to make a climax in a scheme or to provide a vivid contrast to a group of greens. The red ball of the setting sun vanishing behind a cloud low on the western horizon challenges the whole sky, focuses it and balances all the blues and greens in the eastern hemisphere, though a hundred times smaller in area. Yellow, the second primary, is always exhilarating, without being harshly so, like red. It is the colour of sunlight, of primroses and of everything bright and clean: it suggests young life and morning freshness: it is a little delicate, perhaps, and weaker in its effect than the valiant radiance of red, but it is more pure, more gentle and less militant. Yellow by itself, I think, achieves most; for in its various shades, dark in the shadows from orange to a glowing gold and burnished where the light strikes it to a flashing brilliance, it is the colour of ecstasy. Then blue, the third primary, is the colour of serenity and peace, and when it is light and tinged with the faintest yellow, like the lower sky on an April morning, it is the most tranquil shade in nature. But a "steel-blue" is a hard colour, adamant, cold and unbending; and ultra-

marine, owing to the hint of red in it, is rich like sapphires or the sea on a northern coast when an east wind races across it.

Then if we recollect the secondary colours, their characteristics occur to us. A strong purple, for instance, is a noble shade in the right place; orange is a flaming violence if uncontrolled, but, if moderately used, it is the life of a scheme of decoration and the first instrument of vitality. Green can be boisterous too, like those vivid hues on chestnut trees in May, but it is usually soothing, quiet and thoughtful, the colour of repose, of a lawn shaded by trees and a bank of moss, of deep sea water and gently swaying weeds, of ancient rocks and stones and boughs and limbs of trees and thick protective foliage.

So too among the tertiaries, brown—that useful foil—suggests cosiness and warmth, the colour of wooden walls and matted thatch, and fur; grey is virtuous, austere, a little cold and serious, not with the absolute stark purity of white but the shadow of it, and not with the dark solemnity of black but a hint of it, like the habit of a nun.

One can hardly suggest these things in words, but the associative ideas exist and are recognized even by the most thoughtless. Would a debutante, for instance, go to her first dance in a dark green frock? Or can we imagine a more suitable colour for a guardsman's tunic than its scarlet? There are colours which are properly significant

for things and there is a natural suitability of shade. Hence in the matter of the relation of colour to architecture, its significance must be proper to the purpose of the building, both in the emphasis of form and in the selection of a tint. Were the Houses of Parliament built in light pink marble, they would distress us for their lack of gravity; and were the Albert Hall to be painted black, it would be less sought after for bright and festive functions.

There is also a matter analogous to this propriety in the choice of colour or tone, and that is the question of degree of richness of colour in buildings generally. Like the other, it is controlled—or should be—by the purpose of the building which it is supposed to adorn. It is a common thing to hear the greyness and monotony of our streets commented on; but it is more rare to hear a complaint that any individual edifice is too highly coloured. I have met, however, a Scotchman who does not like St. Mark's at Venice for this reason, but I have known more Italians who shrink at the thought of boarding in South Kensington because of its dismalness. Many, however, will agree with me that the natural colour which Portland stone (not stucco) assumes in London is delightful, and that any material for exterior works, more precious like marble, or manufactured like terra-cotta, rarely looks more pleasant. Colour on buildings in England is, I am sure, for their interiors unless it is the result

of the elements acting on the natural shade of ordinary materials. The super-abundance of richly hued exotic materials in the Albert Memorial probably accounts for the ridicule it receives: secretly I rather admire the monument when it appears as a grey silhouette in a mist.

Britain is not a land of colour; and few of the northern States of Europe enjoy an atmosphere suitable to it. The south of France, Italy, Spain and Greece alone can show us the fullest employment of colour in architecture and properly display its value in giving additional significance to the appearance of building.

Conceive, therefore, a great house on the shore of the Mediterranean. Here we have an effect which is almost more one of colour than of form. It is set in a brilliant scene; it is built of richly coloured materials; it is designed—as it were—in colours, and lines are merged into their fantasies. It would be a square-looking house with two high stories, each enriched with columns and windows balanced on a central line. The focus is probably a three-arched loggia leading to the entrance in the middle. The whole façade would have a look of being washed with a golden pink, through which the tints of orange and carmine, red and ochre, glitter or gleam from polished marble, tile or painted plaster surface. The great cornice casts a deep bronze shadow across the front and this colour is intensified

almost to black on the wall behind the entrance arches. That is the dominant aspect, so to speak, of this house of colour. Yet its subsidiaries are even more lively; for the tightly closed shutters contrast their light and faded viridian with the thin scarlet strip of roof; and, as if that were not enough, nature has trailed across a balcony some creeper with crimson and vermilion flowers or drops on the white steps and pavement the dying petals of a purple clematis. These colours, set among leaves of every conceivable green and backed by the glare of a pure cerulean sky, beat the eye all at once. Yet the effect, if dazzling, is unified, and harmony is maintained by the hot yellow of the sunlight.

There is the same profligacy of colour inside the house, yet darker, more subdued and, of course, quite artificial. The hall is probably built in the palest marble, almost cold in its effect. The walls and columns, statues, ceiling and floor are light and of a delicate shade of cream or pink. The very monotony of it is charming after the variety outside. But in the rooms we return to splendour. There is a series of them all different and very highly coloured. Some are merely panelled, and painted a fine grey or green with gilt enrichments, others are heavily embroidered with the tinted ornamental forms peculiar to late Renaissance architecture, and one or two are even decorated, in the highest sense, by the genius of Tiepolo, that artist who really knew the right

combination of pictorial art with the forms of building.

In such a room one can hardly live; it is a casket of art and a thing to stand in and admire rather than inhabit. It is very likely a comparatively small apartment, yet the effect of its decoration enlarges it. For we are made to see through the walls and are transferred by our vision through their painted architecture to never-ending scenes of stately festivity. The general colour of the room is the colour of plaster painted like stone, sometimes cream, sometimes white, sometimes even a pale and curious mauve or a green like soft wet leaves. The walls, made up of dado, columns and cornice, stand on a neutral-tinted floor. Above the cornice a balustrade, drawn in marvellous perspective, just appears and through and above it a pale sky is painted right across the ceiling. Groups of delightful figures float among its clouds without challenging our attention; they merely populate the ether with a shy and softly tinted existence. All this colour is light; light floor and dado, lighter columns and cornice and lightest sky. Depth of tone and the richer shades appear between the columns only, where the romantic and often life-size figures who pass through the pictured halls, or sit with majestic ease on steps and thrones, are clothed in violet velvet, scarlet and crimson stuffs, steel armour and black helmets. Some are in shadow cast deftly by the columns over groups of men

and women, servants, pages, animals and all the furniture of revelry. They live as it were through an imaginary glass framed in the false painted pillars on a plaster wall. Yet the frame is the architecture of the room, though painted, and the whole apartment is a picture, the actual structure fading into the apparently real and the real into the fantastic though possible structure through the walls. This is decoration at its highest and the glorification of architecture by the fullest use of coloured paint. It is art in a double sense and play on two instruments in harmony.

Yet I have seen in Italy as well other rooms in which specific colour and the use of the more natural shades of material, not paint, has an effect of equal value. For instance, a salon rather long and low with a shining polished wooden floor, hung all over its walls with a crimson silk from Genoa and furnished with chairs and sofas upholstered similarly. The tables have malachite tops and a slab of purposeless lapis-lazuli shoots from a pedestal a blue like the sea at Spezia. These four strong tones of brown and red, green and blue, are held together and enchained by the gilt of the structural furnishings—tall mirrors, carved consoles and the delicate curving legs of chairs. They are balanced, too, and a little checked by one or two ancient pictures making lakes of black on the walls in the thin yellow of their frames; while all is focused and reflected in the countless curves and facets of a great silver bowl

standing in the centre of the room on a small table.

It is quite apparent, I think, that this room is so delightful because the architecture of it—its simple arrangement of lines of building enclosing a space—is made much more vital by the proper use of colour. That is, the general feeling of vital stability is made appreciably stronger and is emphasized by the actual colours of the component surfaces formed by the lines. Walls are a protection encompassing us; so rich red walls are emphatically so. Their colour is significant of warmth and shelter. Moreover, the whole surface of the silk is not quite one shade; there are at least three degrees of depth in the crimson of its pattern. Hence we have reiteration and repetition within the principal element of the composition. Similarly there is repetition in the surface of the malachite—a green in exact contrast to the red of the walls and wholly opposite and equal in intensity, yet, like it, of subtly various shades due to its natural configuration. Neither surface—of the silk or the stone—is quite a monotone; both flicker, so to speak, and in their myriad threads and granules reflect the light and catch and repeat their colour. Hence their vitality, but controlled and ordered and stabilized by clear outlines and the rigid frame of the room and its symmetric furnishing.

I have noted, too, the great value of the dark brown floor; for it modifies the red in favour of

the green and so restores the balance. The pictures, too, modify them both by a grave and gentle hue in contrast to these two exultant colours; while the rich spot of brilliant lapis-lazuli makes just that note wanted to create—not a discord—but a sound of greater interest than that of a perfect unison, the little accidental which gives it character, the touch—odd, whimsical and strange—inexplicably present in the greater works of art. The colour of this room is that of a rich and splendid vitality, significant of life spent nobly. It is an emphasis of the character of the house sheltering a distinguished family. Thus colour aids architecture in the preservation of its sentiment.

CHAPTER FOUR

THE MATERIAL REQUIREMENTS

I

That element in the substance of architecture which I have called the desire for beauty is not by any means wholly explored by the analysis of its nature which I have put forward in the two previous chapters to this. The quality of harmonious unity and the relative function of significance form together the starting-point only in the æsthetic affair. The achievement of beauty in architecture is something rather more elaborate and will require, later, a return to this point in the discussion after a long digression into an equally preliminary analysis of the foundations of the other element, namely, the fulfilment of the material requirements. For the reader will perhaps recollect how, at the beginning of these notes, I postulated that the adjustment of the two elements was the whole function of architecture and laid stress on the *one* arrangement of the lines of building which resulted from it. The discovery of the character of that adjustment and the quality

of the blend is therefore still our object, and I think that it will perhaps help to maintain that point clear-sightedly if I switch the train of thought here right off the question of appearance for the sake of beauty to the equally weighty one of arrangement of the lines of building from purely material and practical motives.

There is immediately the danger of a confusion of thought into which we may fall. I mean the mistake of starting a discussion on and laying down rules or desiderata not for good architecture from this point of view but for what is really good building—quite a distinct thing. Yet, let me say at once that architecture if it is to be satisfactory —if it is to give the maximum content—must be based on sound building; and this merely means that any edifice with the smallest claim to architectural merit—as nearly all have—must be capable of standing up, of lasting its destined period, and of sheltering, warming, lighting and hygienically enclosing its inmates. It may, of course, do more than that; the structure may be astonishingly bold or the craftsmanship exquisite, the lighting may be brilliant and the hot water supplies more than abundant. But it cannot do less. Anything less than mere stability for a guaranteed period, actual shelter, sufficient light, enough warmth and proper drains and ventilation implies something done which is less than what is conveyed by our definition of building—namely, "the act of putting up what is generally known

as a building to-day". We do not, in fact, admit such discrepancies as would appear in a house without stairs, a church without windows, or a museum with a leaky roof. No architect has ever perpetrated them except under severe condemnation, even if the building in which they occurred was the most delightful in the world to look at. In proportion to the degree of civilization of other periods also and to the demands different races have made on constructive invention these essentials of strength, durability, shelter, light, warmth and salubrity have always been expected. To-day, of course, efficiency—that word which embraces them all—is the one thing insisted on universally in building matters.

The question, therefore, of where does building end and architecture begin need not trouble us seriously; for bearing in mind the fact that building is an affair of putting together materials, and architecture is an act of arranging the lines of the forms those materials will assume when put together, we perceive quite clearly two separate and distinct performances. One involves only skilled manual labour under discipline, and the other involves knowledge of the strength and qualities of the materials and, as well, knowledge of methods, of construction, of heating, of lighting, of hygiene, of cost, of law and even of human nature, all under application to the single problem of an efficient result from the forms which manual labour fixes together. Conse-

quently too, just as in the æsthetic affair an appearance of harmonious unity is attained by the correlation of certain factors in the design, the maximum efficiency is discoverable in a building when all these fundamental practical demands have been not only properly met, but have been somehow so adjusted to each other that none is overstressed at the expense of the others and all are satisfied, with seeming ease, in the most economical way. That is to say, there is less value in praise for the singularly successful lighting of a house, for instance, than for the whole reasonableness of its general disposition. Application of efficiency in architecture to-day means that all the material requirements have been adequately fulfilled in proportion to the demands of each and that their individual influences on the lines of the structure have been united in an economical synthesis of sound building. Our thoughts therefore must be directed now to the separate consideration of these influences—as I shall call them—and then to the question of their inter-relation.

II

When we begin to think seriously of the phrase "the lines of building", it appears that this is another of those seemingly simple groups of words which require fuller understanding—in another parenthesis to our main line of thought. It will be difficult, indeed, to trace the effect of

the influences from the various material demands on architecture without being fully satisfied as to what this expression means.

One thinks immediately of such obvious lines as the vertical edges of a window opening, or the long horizontal ridge made by a string-course round a building. These are fair examples; but far more is embraced by the phrase and included in the definition. There are, for instance, such lines as that made by the junction of the underside of a staircase with a vertical wall, or that made by a pipe taking the bath water down the outside of a house, or that continuous line which encloses a room, either round the cornice of the ceiling or the skirting of the floor. Then there are the curves of building, like the bulge of a rounded bay or the slope of a cupola, the circle of a column or the loop of a theatre's seats; and the twisted, broken, bent or wriggled lines must be included, such as the steps of a Scottish gable or the rolling waves of a Flemish one. And in this group too are the crinkled front of a radiator or the corrugated edge of a sheet-iron roof. For the curved silhouette of the dome of St. Peter's is as much a line of building for our purpose as the edge of the brick round a manhole in a back-yard at Acton.

Now lines of building appear to architects on paper and exist in fact, but they do not appear in fact as they do on paper. That is, they are never seen quite as we draw them, not that this is highly

important, but it should be known outside the profession, as it leads to a misapprehension sometimes of our intentions. For instance, I am in a room facing the left-hand end of a tall cupboard about ten feet long. Only one minute spot on one panel of a single door of the cupboard which is exactly opposite my eye looks as it would look if the whole piece of furniture was drawn "in elevation"—that is, as architects draw it; and this means, of course, the elimination of perspective and the flat drawing to scale of a measured object from a point of view as wide and as high as the cupboard is broad and tall. There will be no indication on it of any depth of recessing backwards or projection forwards: only the lines which mark the edges of such recesses or projections will appear when they are visible to an eye exactly in front of them; and all horizontal lines will be shown exactly parallel. If, however, I sketch this piece of furniture as I sit opposite its left-hand end, all the lines above the level of my eye would slope a little from the left down to the right, and conversely those below that level would slope up. Moreover, I can see and would draw the left sides of the projecting mouldings on the right half of the cupboard, as well as the undersides of the beads and fillets of the cornice and the tops of the members of the base. Thus I can see and would draw a far greater number of lines than would appear in an elevational drawing because, naturally, a vertical

fillet in perspective shows three vertical lines—two in front and one extra at one side—but on elevation it is only shown on paper by the two in front.

Which of these two then are the lines of building? (Assuming for a moment that the cupboard, being a fixture, may be considered building.) Most assuredly they are the lines which appear in fact—actually as I should sketch them. Architects do not draw them thus, it is true; but we do nevertheless draw them all. We show the three lines of the vertical fillet in perspective by drawing its front in elevation and its side separately, and both to scale. This is our way because it is essential for the translation of our thoughts into building, and though it has become customary to design cupboards, houses and whole institutions without sketching them in perspective as well, and if that is very probably deplorable, I think it possible to claim on the other hand that we do acquire a kind of ability to draw them flat while we feel what they will look like in reality.

Moreover, we draw buildings in plan and in section as well as in elevation, thus ensuring the delineation of every surface truly to scale; and our ability to draw three views of one thing at the same time assists rather than confuses the subconscious feeling and knowledge of its actual appearance in perspective. A vertical fillet on the cupboard, for instance, drawn "on plan"

shows by four points the distances apart of the four lines providing three strip-like surfaces which complete the vision of it from any point of view; and the cornice drawn "in section" shows what Ruskin called a profile, consisting of a number of points joined by a line sometimes straight and sometimes curved, in places horizontal and in others vertical, each projecting portion of it drawn to scale.

I do not wish to lay too much stress on how architects draw: it is merely a means to an end, though facility in it is a great pleasure for itself. But these thoughts on the cupboard prompt the rather helpful idea that the lines of building may be divided into three categories, namely, the lines of plan, of section and of elevation. The first are all those which indicate the dimensions of rooms as regards area, the lengths of corridors, the widths of steps and doors and windows. They appear, too, in the curve of a staircase, the circumference of a column, the loop of an apse, the ellipse of a skylight or the shape of a bath. Hearths, architraves, pilasters, niches and all the little things like newel posts and the feet of balusters contribute smaller lines of plan. They are all seen in relation to the main lines of a floor: they intersect and elaborate its single direction and, so to speak, wriggle the boundary on its way round the room. In any large eighteenth-century salon, for instance, the thick walls are pierced by recessed doors and windows.

These add five or six deep extensions to the rectangle of the floor. Then the elaborate marble fireplace in the centre of one side makes a wide dent in it. Probably too, on the remaining wall spaces, there are pilasters projecting slightly from the main surface and making numerous other breaks forward in the line of the skirting; and between them there may be niches curving outwards from the floor in elliptical exedræ. The result is that the eye in pursuing the line of the floor's boundary is jerked in and out the more rapidly as these features are multiplied, and invariably finds relief, in such rooms, when the furniture is reduced to the minimum quantity or, if present, is so disposed that it will emphasize the main lines of the plan of the room rather than add confusion to its intricacy. Hence probably the slightly stiff and uninhabitable appearance of these stately apartments.

Primarily the lines of section indicate the height of an interior space and its shape in a vertical sense analogous to the function of the lines of plan. Just as they show the projection and depth of the members of the cornice on my cupboard, so they can show the curve of a station roof like St. Pancras or, conversely, the depth of a swimming-bath. Steps especially are almost meaningless things on a plan—merely a group of equidistant parallel lines—but they seem real on a section, for the relation of levels in structure is the pith of design in section. There are some

buildings, in fact, where it seems the plan and elevation are both dominated by the section, improbable as this may sound. But the Palazzo Durazzo Pallavicini and the Università at Genoa both suggest this to me. They are built in a street on and against a very steep slope. The courtyard of each is therefore nine or ten steps above the level of the road, and the garden at the back is twenty odd steps above that. The opportunity here has been delightfully seized by the architect, for one enters a wide, dark vestibule from the glittering street and mounts the first flight of stairs almost at once into the moderate gloom of the cloister round the cortile; thence into complete daylight across this space; and as one mounts the great staircase on the further side with its branches right and left the trees and flowers of the garden appear high above one in a most alluring manner. As with all powerful architecture, one is induced to move through it; and what entices one in this case is undoubtedly the arrangement of the lines in section—the adjustment of levels and the easy delicacy of the heights of steps.

There is no doubt, however, that thirteenth-century church architecture, especially in France, provides the type of building in which the lines of section are most influential: firstly, because a covered space—an interior—was their primary object and the outside was allowed to develop itself as the support of the inside dictated in a

perfectly organic manner; and secondly, because the architects of that period developed the theory and construction of a lofty roof supported on the minimum amount of wall to an astonishing degree. Such scientific and courageous structures as these churches are bound to display a kind of engineered effect and an appearance of taut rigidity especially in section, because the whole system of support was based on concentrating the weight of the roof at opposite points on the parallel walls and on carrying the thrust from the roof to the ground through buttresses—in reality other walls—boldly projecting at right angles from these opposite points. Hence there arose a system of structure repeating itself at intervals across and at right angles to the axis of the building to be roofed. This system is the Gothic section. It is the foundation, so to speak, of that amazing achievement of catholic architecture in the Middle Ages.

The Greeks built two parallel walls of marble with unimportant openings in them and joined the two with a kind of flat timber roof. The Romans concentrated the weight of their roofs at points in a cumbrous way, so that the intervening wall spaces were less actively in support than the principal piers; but it was not until the eleventh or twelfth centuries that the right-angle system I have described was really explored and taken advantage of. It then became the standard mode of construction for the class of building

most in demand—namely, churches—in exactly the same way as a series of steel trusses on stanchions is the standard mode of construction to-day for the class of building most in demand—namely, factories. For I suppose that an agnostic thirteenth-century intellectual resurrected to-day would be as thrilled by the cotton mills of Lancashire as a devout modern monk is by the churches of Rouen or Amiens.

Now the ordinary arrangement made by this system consisted of the nave of a church and its sanctuary covered by a continuous stone vault. The weight and thrust of this vault was gathered by ingenious ribbing at points opposite each other on the two walls and about 15 or 20 feet apart. The points on the wall were at the springing of the vault ribs, sometimes as much as 90 feet above the floor. The weight and the thrust were then separated, the former being taken direct to the ground through a vertical stone pier the thickness of the wall and any width from 4 to 10 feet, the latter being spread through and neutralized by the buttresses of the same width as the piers and projecting at right angles to the walls as far as or even further than the whole width of the nave itself. And as well, the portions of the walls between the piers were entirely removed and the piers were connected at a point somewhere above half their weight by arches surmounted by a triforium and a clerestory of brilliant glass which reached to the very apex

of the vault; the buttresses were pierced by arched openings for at least half their depth and the thrust was made to fly across the heads of them; then these arched openings behind the piers were in their turn connected by a vaulted roof parallel to the axis of the nave and two lesser naves or aisles were thereby formed.

The tall choir of Beauvais is the ultimate achievement of this system of structure, but the section of Bourges Cathedral which I illustrate shows its culmination before the breaking point was reached. This immense church offers us one of the simplest but, I think, the most satisfactory design in the whole of France. It has the unusual advantage of having been built all at one time, with the exception of parts of the west front; and it appears to do with a splendid ease and a striking effect of harmonious unity what other churches had struggled to achieve through centuries of experiment. It is the complete flower of Gothic and its architecture is unquestionably classic. It is therefore not exactly dull, but a little severe, complete, perfect, and free of incident or surprising jollities. The plan consists of nothing but five parallel naves unbroken by transepts for their whole length of nearly 350 feet. The west front with its five doors is of vast width and very flat, while the eastern end is rounded, the two other naves or aisles following the curve of the apsed central one with unbroken continuity. The entire effect,

therefore, depends on the repetition twelve times of the sectional system of structure, so that the outside is like nothing but a great stone tent with ropes and pegs of masonry. The interior sectional shape was therefore the matter of most importance in the building, for such a blatant repetition of one which was unpleasant would almost completely ruin the æsthetic value of a church.

Architecture has sometimes been divided into two classes—"organic" and "arranged". Mediæval ecclesiastical architecture has been put down as the former, and the monuments of the Renaissance and baroque periods as the latter. It is true that these later buildings were usually designed to achieve an exterior elevational effect and that their dominant aspects were those displayed to the man in the street. In that sense they may justly be described as "arranged" effects, and similarly the exterior of any Gothic church is very clearly an organism in stone, a mechanical affair which has merely happened as the result of construction. But the bulk of the outside of any great Gothic church was admittedly that because it was the envelope of a repeated sectional shape which really formed the skeleton of a building. And it was this sectional shape which, I contend, was as much "arranged" in the more celebrated churches of the thirteenth century as was the west front of St. Paul's or Michelangelo's treatment of the Medici tombs at

PLATE IV: BOURGES CATHEDRAL

Florence. A mere glance at the drawing of Bourges will show how delightfully shaped are the individual pointed areas of light in the section: they are designed voids, and the two lateral aisles, in strong contrast with each other, emphasize and enhance the magnitude of the central nave. It is inconceivable to me that such a happy effect of proportion could have grown haphazard from the ground without being previously "arranged", for this is an instance of pure beauty in section, that rare quality in architecture which I said it was sometimes possible to discover.

There is discernible, too, in this section a development of structural possibility which hardly appears anywhere else. To begin with, the nave is 41 feet wide between the columns and 120 feet high from the floor to the vault. Greater than this have been built, but the point to observe here is the unusual loftiness—in proportion to it—of the nave arcades and the vaults of the inner aisles, which are 70 feet from the floor. The result is a wide space measuring over 120 feet in which the two rows of columns stand with an effect of stateliness only equalled by the greater Egyptian temples. Moreover, as the buttresses project almost 60 feet each side of the nave, thereby permitting their double piercing by the aisles, and as the inner aisles are more than twice the height of the outer, it has been possible to insert above the arcades between the two a second triforium and a second clerestory similar to but

rather smaller than the main triforium and clerestory of the nave. The result is that light comes through the richest glass of the best period from three different surfaces at three different levels at either side (*a*, *b* and *c* on the drawing). The windows of Chartres are its glory, but the windows of Bourges are as good and are better displayed owing to the extraordinary skill shown in the arrangement of its lines of section.

III

It seems then that the lines of section in architecture have much to do with construction—that is, with the superimposition of materials and their joining together for the practical purpose of creating a wall or a roof. They are greatly concerned with the support of buildings, and though they are influenced to some extent by the qualities of the materials used, they are principally the expression of structure in its most literal sense. The lines of plan are influenced as well by the qualities of materials, but to a smaller extent. What the lines of plan represent principally is the purely practical factor of "commodity", as Sir Henry Wotton calls it: they are the expression, by the boundaries of superficial areas, of the required sizes and shapes of apartments in a building.

Now the point to which I wish to draw the reader's attention here is that neither of these two kinds of architectural lines is wholly in-

dependent of the other. For the nature of a structure supporting a roof, for instance, has a definite representation on a plan ; and, conversely, the width of a room has a decided influence on the structural lines of its section. Let us suppose, then, that the two rows of columns in Bourges Cathedral were discovered to be insufficiently strong to support the weight of the vault. They would have to be either thickened or increased in number. Immediately the plan is altered by the additional solids added to the existing columns or interposed between them, with the result that there is less floor space available for worshippers and the architecture of the building is less successful than it was.

On the other hand, supposing we wished to build a small village hall to hold a hundred people or so ; if we kept it long and narrow between quite plain walls with windows in them, we could roof it satisfactorily with pairs of rafters about a foot apart and jointed by horizontal collars half way up the slope of the ceiling, so that the section of the hall at any point in its length would be a kind of inverted U. If, however, for convenience we made it shorter and wider so as to enable more people at one time to hear every word that was said by a speaker on the platform at the end, it would be necessary to introduce some sort of roof truss repeated at intervals along the length of the hall, together with extra strength in the walls at their points

of support, and possibly small buttresses. This creates at once an elaboration in the lines of section in the roof, and that in its turn is reflected again in the plan by the structural necessity to place the window openings only between these roof trusses and not of unrestricted widths as in the narrower design. This is merely a simple instance of the way in which the material requirements of convenience and structure are interwoven and react upon each other.

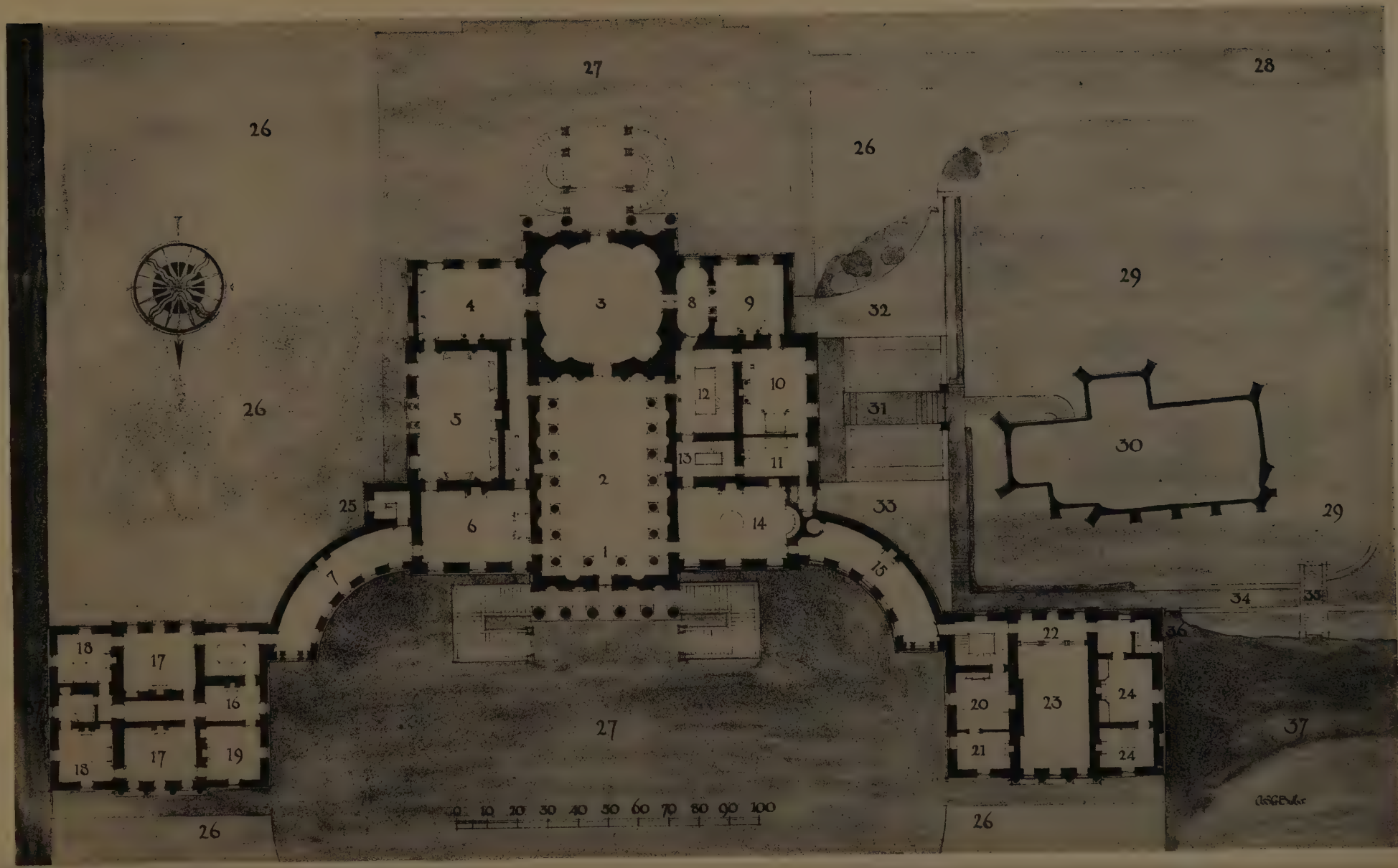
We may say, therefore, that these two, the lines of plan and of section, work together to fulfil the material requirements of architecture. They are in combination the instrument we use to carry that out. Yet, as I have shown in Bourges Cathedral, the desire for beauty—which is the other element in architecture—may play a part in the arrangement of the lines of section; and I expect to show shortly that it may do so in the lines of plan as well. Nevertheless, it is undoubtedly true that these two are more closely associated with the material affair than the lines of elevation which result from them. That is, if we have a fixed plan dictated by convenience and a fixed section dictated by constructional possibility, the elevation arrives automatically from the fusion of the two, like the southern flank of Bourges Cathedral. It is the organic result. But if we begin a design, as we often do, with a secret determination to achieve a certain kind of elevation, the desire for beauty in the appearance of

the whole exterior of our building works concurrently with the adjustment of the section to the plan and affects—sometimes perhaps adversely—both the convenience and the actual strength of the edifice. When the one affects the working of the other two to produce a result of æsthetic value which does not, in any degree, depreciate the practical excellence of the building, then the adjustment of the two elements in architecture is working in its proper way and the lines of elevation may be played with even fantastically. But we can very rarely play with the lines of plan or section, for they are ruled by the hard ordinances of common sense. We may have a small window with an outline like a clover-leaf, perhaps, and it may possibly look pleasant; but a plan with such a boundary would be put down as a monstrous joke, and a section to match is inconceivable.

There is another simple example which puts the relation of these three kinds of line quite clearly. Let us imagine a room with a high end wall which has to be pierced by a large new window. Let the wall be 12 feet wide and 10 feet high. First, we think perhaps an opening 4 feet wide would do, so we draw it in plan that width and divide the breadth of the sash into four panes by three vertical glazing bars. These make three little solids on the plan. Then we think that 6 feet high will be enough, so we draw the section that height and divide the length of the sash into six panes by five horizontal glazing

bars. These make five little solids on the section. Lastly we set up the elevation of the window from this plan and section and we find that the proportions of the panes are quite unbearable. They are slightly less than square and shorter than their height, so that the whole window looks crushed downwards and squeezed from above. Therefore we begin again, but we design the window first in elevation, so as to achieve a happy proportion in the panes; and we translate this drawing back into another plan and section. So finally we have a slightly narrower and slightly taller window, but as it fits admirably into the wall space and admits the right amount of light at the proper level, we leave it there, wisely allowing the desire for beauty to oust the preconceived fulfilment of the material requirements. And that gives us a rule in the adjustment of these two elements to each other. It is so obvious as hardly to require enunciation but we might say that wherever an appearance may be improved without in the least detracting from the value of the manner in which the structure in question fulfils its material requirements, the opportunity to do so must be taken for the architecture to achieve its maximum success.

I propose, then, to illustrate this, to make a short study of Kedleston Hall, that celebrated work of Robert Adam in Derbyshire. We shall discover there, I expect, that other rare quality in architecture—beauty in plan, analogous to the


27
28
26
26
29
4
3
8
9
32
10
12
26
5
31
30
13
11
2
25
6
14
33
29
1
7
15
34
35
36
18
17
22
16
20
23
24
37
27
18
17
19
21
24
0 10 20 30 40 50 60 70 80 90 100
26
26

beauty in section of Bourges Cathedral. The drawing reproduced here[1] shows the first and principal floor of the house, which is at a level of about 12 feet above the ground. As in many mansions of the eighteenth century, the ground floor contained little more than a collection of offices, waiting-rooms and servants' quarters. The stately life of that period was passed upstairs. This drawing, too, shows the house practically as Adam left it in 1765, except for a few details in the less important rooms. The scale of feet below it will convey some idea of the size of the building, and the numbers on the rooms and elsewhere represent the following :

1. Front door.
2. Hall.
3. Saloon.
4. Library.
5. Drawing-room.
6. Music-room.
7. East gallery.
8. Antechamber.
9. State sitting-room.
10. State bedroom.
11. State dressing-room.
12. Great staircase.
13. Service stairs.
14. Dining-room.
15. West gallery.
16. Lobby.
17. Sitting-rooms.
18. Bedrooms.
19. Breakfast-room.
20. Still-room.
21. Sitting-room.
22. Bridge.
23. Upper part of kitchen.
24. Housekeeper.
25. Garden stairs.
26. Lawns.
27. Gravel.
28. Pleasure grounds.
29. Churchyard.
30. Church.
31. Church approach.
32. Gunroom wing.
33. Bootroom wing.
34. Passage.
35. Bridge to Church.
36. Back entry.
37. Park.

[1] By permission of the late Marquess Curzon.

Since lines of plan are dictated in the first instance by convenience, let us study that in this design for a nobleman's capital seat which was built at a time when peers lived in a more secure and established splendour than they do at present. We note firstly the important entrance and the great hall for the reception of guests, the six large apartments in which to entertain them, with easy access to the garden, the three staterooms for very distinguished visitors and the three staircases for persons of various rank to ascend to their bedrooms above. All this is admirably arranged for its purpose. Any one room is easily reached from another and the space available for entertainment is immense but not the least monotonous. Secondly, we note how there is a whole wing in three floors, to the east of this central block, in which the owner of the house lived with his family in greater comfort but less magnificence; and thirdly, we observe how this wing and the other to the west, in which the servants are completely isolated, are connected to the centre of the house by two galleries so valuable for the display of those objects of art of which some knowledge was considered a necessary part of the education of a gentleman. So that, if we bear in mind the fact that servants had access to all parts of the house through the ground floor, and that in those days a footman did not object to walking two hundred yards in answer to a bell, we might say that the material requirements here

have been well fulfilled by the disposition of the parts of the mansion and the lines of their plans.

Moreover, what I sometimes think is an unrecognized triumph in the plan of Kedleston is the fact that there are no "back premises": no part of any front is less distinguished than the others, for tradesmen and servants all pass through a discreet little gate at the point marked 36 and creep along an almost subterranean passage, beneath the shadow of the church, to the back door which is at the foot of the staircase in the western wing. The low wings too, labelled 32 and 33, have the appearance of garden walls with flat roofs through which light is adroitly admitted to obviate the necessity of windows. We might, however, make one criticism also—the great staircase is placed so far out of the centre that the people who sleep above the drawing-room have either to go up to their bedrooms by the long, steep and rather inferior staircase adjoining it or they must cross the hall, mount the great stairs and find their way through a narrow dark passage behind the cornice at the north end of the hall. Yet it has been explained that the conjunction of the two great apartments, the saloon and the hall, was of much greater importance than easy access to bedrooms; and it will be noticed, in fact, how the saloon both makes an excellent meeting place from all points, and at the same time provides a kind of neutral zone between the ordinary inhabitants of rooms 4, 5 and 6, and

the distinguished occupants of the group of state apartments.

That is this plan from the purely practical or utility point of view. We have looked at it in the first way of the three possible ways in which we see things, as I pointed out some chapters further back. Now we are not interested at the moment in this house as a link in a chain of architectural development nor in the place of noblemen in the scheme of things. So we may omit the second way of looking at objects and endeavour to see it in the third; that is, let us search for beauty in the design.

Take the plan. Here you have a shape, drawn on paper, representing a very large house. At the first glance, any architect would delight in it, for there are repetition, balance and climax in the parts of the plan instantly visible. The harmonious unity of the whole strikes the eye. The beauty of it is perhaps a little too easily discernible. It is more like a brilliant oracular utterance all in one sentence than a powerful and elaborately delightful oration. Even so, and granted that the beauty is too easily achieved, that does not matter, for nobody ever sees the actual house as we see it here in plan and on paper. It may be a secret joy to an architect, but the owner or the inhabitants of it will never see the roof taken off in this manner and all the rooms displaying the proportions of their areas at once.

Yet we do see plans in reality in two ways.

Firstly, a building like this English palace, with its huge square block in the centre, crowned by a low dome, and its two rather startling curved wings terminating in what are practically a pair of separate houses, has such a decided outline on the ground that the general disposition of the plan is grasped by merely looking at it from outside. From a point in the park to the south of the house and at a higher level overlooking it, Kedleston is seen to stand with a serene beauty on the great stretches of gravel and lawns surrounding it, a silvery-grey mass on an unrelieved plain of grey and green; and, though the building is heavy-looking, especially in the centre, it appears to float like a great ship towing two little ships behind it. It suggests a unified plan-form developed into structure and the eye is drawn forward from the contemplation of the simple wings, gently round the convex bending galleries, sharply up the steep flanks of the central block and so to the great portico of the celebrated southern front, where the double arcs of the staircase plunge forwards and downwards and the lines of their balustrades toss themselves back in the beautiful twists of natural perspective like high waves from the bow of a great liner cutting the sea. There is powerful life in this effective climax to the harmony of the whole and it is largely due to the bold disposition of the lines of the building on plan.

But the second way in which we see a plan

in reality is the more usual one. It is done by the quite obvious way of walking through the compartments which compose it. Then we appreciate the shapes of floors, the charm of distances and the mystery of vista. This drawing illustrates it, if we can imagine ourselves actually in the building. Note how the shape of every room is satisfying, how each is different to the others and how they are balanced and contrasted: note the great distances and the vistas through the thick doorways which can be seen within the building from north to south and east to west, from one great room, across a second and right across a third.

I think, however, it is a little unfair to study this noble house merely as an arrangement of lines on plan, even if there is great æsthetic value in that arrangement, for it exemplifies as well in the highest degree the far more important matter of the adjustment of plans and sections to form cubical spaces in a beautiful relationship; and not only that, but all these adjustments create delightful interior elevations throughout the house, again all different yet bound in a harmonious whole by the genius for architecture of Robert Adam.

Let me try to take the reader for a short walk through some of the rooms on this floor of Kedleston. Let us imagine ourselves in room 17 on the south side of the east wing. It is one of the private sitting-rooms of the owner of the

house, a pleasant rather ordinary apartment, about 14 feet high. As it is comfortably proportioned, simply decorated, quite symmetrical and well lit by three windows to the south, we appreciate it as a room to live and read and work in. Then if we leave this and cross the staircase landing with another south window, we go through a small doorway like a tunnel into the east gallery. This curves away from us to the right in an unexpected whim, and the value of the bend is vastly enhanced by the long oak floor boards following the line of the walls with polished suavity. This room is about 19 feet in height and its loftiness is increased by the narrowing twist in perspective. Hence, the contrast to the relatively low room we have left is very strong. It is emphasized still further by the sudden change in the aspect and the sudden view of the park to the north instead of the south. It was a bold thing to put a blank wall to the sun; but the effect of contrast produced by the abrupt change in outlook is very valuable to the architecture of the house from the æsthetic rather than the material point of view. Then, too, the elevations of the walls of this gallery are richer than those of the sitting-room. There is a richer cornice and a deeper skirting; the dado rail projects further with a bold profile; the marble fireplace is more massive, and the sash windows are taller, more stately and less humanly proportioned. Thus we advance with a widening

view to the north until we enter the full state of the music-room, which is quite 23 feet high. It has still taller windows, a still larger fireplace, and a very rich and elaborate cornice, frieze and ceiling. Colour, too, begins to reinforce the architecture here and the cold aspect of the room is warmed by the pale yellow of the walls and the delicate orange background of the frieze. The doors also are no longer painted white and lightly made, but are heavy with 3 inches of mahogany delicately trimmed with the beads and ridges of the period. Thence to the drawing-room, which is even 6 feet higher than the music-room and looks directly east to another view of rolling park and distant lakes and woods, real English scenery yet ordered and designed to frame the house. This exquisite room is a triumph of English art and of English craftsmanship in the execution of its architecture. Even in contrast to the music-room it is of the utmost richness, though like all great works it is perfectly simple. The effect is achieved merely by emphasis in the right place, in line, in colour and in preciousness of material. The floor is polished oak, the walls are silk of a light strong blue, the 8-foot cove above the cornice is pale carnation pink and the ceiling between its enrichments is painted with the palest gold of sunset, the lightest green and Wedgwood blue. The dado and the skirting are white in strong bold lines and carved with little leaves and rows

of beads in burnished gold. The very elaborate Corinthian cornice is also white and the leaves of its modillions shine gilded in its shadow: then this soft glitter trickles down the frames of the great pictures let into the walls and rolls along the curves and backs and legs of the sofas made to fit the room. The high Venetian window and the four columnar portals of the doors with their pediments are built in polished alabaster flushed with pink and the great fireplace facing the light is carved in white marble. One vast cut glass chandelier reflects it all in a thousand twinkling facets in the centre of the room and focuses the colours. This is a perfect space, not an inch too long or wide or high, and each containing wall, as you survey it, offers an enchanting elevation.

Very wisely the library is more restful. The height comes down 6 feet once more and all the treatment of the room is quiet and darkly rich and learned looking. It is warm and human, facing south, and it reminds us of the room we started in though it is larger and more elaborate and costly. This leads us through a high Doric portico and double doors into the saloon, that great round space lit by a single French window on the south and a lantern in the dome 60 feet above the shining empty floor. This is not a room but a place to walk about in. One finds relief, too, in its plain roundness, smoothly shaped and deftly decorated, after the squares and rectangles which lead into it. It is the centre of

the house and the fulcrum of the plan; and as we walk on it provides the greatest contrast in the house and the climax in effect as we go through the high painted entrance to the hall, the celebrated room which Dr. Johnson came to see and marvelled at. Here the height rests at a level 36 feet the length of the 20-yard ceiling carried by the great Corinthian columns of solid English alabaster. These stand on another empty floor no longer oak, but of interlacing green and purple marble let into ivory. All the light comes from the ceiling: views are abandoned and aspect no longer counts. It is an interior effect alone of architecture in full orchestra.

IV

I have said enough, I hope, about the lines of a building to give the reader some idea of what they are and of their relation to each other. Let us, therefore, return to our principal thought and explore the separate influences exerted on the arrangement of these lines by the six material essentials of strength, durability, shelter, light, warmth and salubrity.

Now one of the most interesting but perhaps the plainest of French churches is that of St. Front at Périgueux. It is a Gallic adaptation of an eastern form of construction and its plan is Byzantine. There is a series of domes and pendentives built in stone and carried by arches and immense stone piers. But the adaptation in

this material of a form of construction much more brilliantly executed in brick at Constantinople was so timid, it seems, that the builders were not only a little afraid of the method but hardly trusted the resistance of the stone itself to carry the weight of the cupolas. Hence enormous strength was demanded in the supports of the roof, and the main piers of this church are of such size as almost to equal, in plan, the area of the floor they assist to cover. This is an example of the over-influence of strength on the lines of building, and it shows, on plan, as a crude closely grouped mass of almost solid squares and, in section, as a pair of squat stone towers carrying with ridiculous ease a low arch between them and half the lid of a thin stone cupola. Moreover, their ponderous solidity can be depressingly felt by any one walking up the nave. Here is an obvious exaggeration—a stupid waste of stone; and the over-fulfilment of the practical demand produces an unpleasant æsthetic result.

A building must be strong, of course, and if parts of it are far stronger than they need be to support the rest they may possibly look pleasant as well, but they actually offend—not our eye—but our reasoning faculty, because we know that they are unpractical. They waste strength; and we naturally dislike useless effort. A look of forbidding strength is sometimes desirable and proper, but over-emphasis of masses from inexperience in construction or fear of material used

is bound to create a visible disproportion and a kind of loutishness in architecture.

The reverse of this, however, is usually the case in modern buildings. There are so often forms made by the arrangement of their lines which we know are perfectly strong forms but they look intolerably weak. Such are the thin pillars in our stations carrying the huge roofs and standing at wide intervals on the platforms. They look as if they are certain to break, just as the long beams, apparently made of stone, across the heads of shop windows, look as if they are certain to bend and droop in the centre. Yet we know, in both cases, that the strength of the visible or invisible steel is safely in excess of the compressive or tensile stress put upon it. The material demand has been adequately met, but the desire for beauty, meekly asking—not for "truth"—but for a look of mere possibility of supporting strength to comfort it, has been almost wholly disregarded.

The influence of the essential of strength in architecture is naturally regulated entirely by the hardness of materials; and by hardness I mean power to resist crushing weight or shock, and power to withstand bending or cracking or shearing when unevenly pressed. If, for instance, we wished to build an open-ended shed and had no materials in any way available except granite, cement and sand, we should probably erect a pair of rather low and thick walls joined by a

continuous arch of granite blocks to form a barrel-vaulted roof. The influence of the strength of the material would then show in plan as two parallel solid walls with only such openings for light as could be bridged by a single slab of our material; and, in section, it would show as a low simple arch made so as to keep the thrust as near the ground as possible. The building would look rather like a railway tunnel through a hill with the hill removed. Suppose, however, there was oak available in abundant beams and planks and boards: the solid granite walls would then reduce themselves to two parallel lines of piers, perhaps 18 inches square, and 12 to 15 feet apart and sufficiently strong only to carry one oak truss and a portion of the weight of the purlins, rafters, collars, ridge, battens and oak shingles which composed the roof. Hence, owing to the strength of oak in conjunction with the strength of granite, and owing to the practical employment of each without waste, this shed would be a high and light and airy structure five times more efficient and ten times less costly than the other.

The various materials we use in building have various qualities of strength. Glass, for instance, is so hard it needs a diamond to cut it; yet it easily cracks with a shock. Lead too is so weak it can barely support itself, but has, on the other hand, an extraordinary tenacious strength. Slate is helpfully strong in thin sheets and stone is strongest in solid cubes. Wood bends under a

direct load, but scientifically framed in a roof truss or a panel it has a tough rigidity which is only surpassed by steel. Pure concrete cannot span a space, but, in a mass, almost nothing can crush it; so that, when it is combined with steel, its reinforced strength has a nearly unlimited range of structural possibility. We can, in fact, to-day build almost anything in any shape we wish by using this material. The influence of its great strength and rigidity on the arrangement of the lines of what we build appears in a grim skeleton-like severity and baldness. Few of us dare, as yet, to allow it to show itself unrelieved by the softening influences of relatively weaker materials.

V

In a sense durability is closely related to the essential of strength in building because it supposes hardness—but hardness to last a given time. A stone house in Sicily, for instance, might be extraordinarily strong, but an earthquake might shatter it a week after it was built, whereas an oak-framed house of the same size, though built in an actually weaker material, would resist the tremors of the earth and so be more lasting than the other. Durability depends on the power of resistance of the materials of building to the action of time in the form of weather, of fire, of rot, of insects, of what we call "wear and tear", and of the natural disintegration of their substance. So that if parts of a house are very

exposed to rain and wind or are easily inflammable or if they are not ventilated or attract beetles or if they are very much used, the matter of durability becomes important. It dictates the choice of materials and the arrangement of the lines of the structure to resist these attacks. For, if we add a room to our dwelling and build its walls in solid enduring brick, it is a mistake to roof the addition with cheap tarred felt which will decay and disappear many years before the walls show signs of disintegrating. It would be again a question of waste—waste of the durability of the walls by exposing them to the effects of the early collapse of the roof.

This kind of waste of the hardness of one part of a building by allowing the rest of it to decay through the use of a less lasting material is well illustrated by the remains of Greek temples. Most of their marble walls are standing now, but there are no vestiges of the timber roofs which used to join them. They fell in and perished under the influence of time and neglect; and we may reasonably suppose the Greeks knew they would do this, otherwise they might have tried to invent some sort of marble vaulted roof of a durability equal to that of the walls. But such a roof would have demanded a rather different construction for its support and the arrangement of the lines of the columns outside would have been affected; and that would have destroyed, perhaps, the work of centuries devoted to the

perfection of a simple beam construction without the use of the arch or vault, even as auxiliaries.

This point is further illustrated by the remains of imperial Roman buildings. In this case, the brick and concrete vaults were made as lasting in quality as the walls which supported them; and a public building like the basilica of Maxentius at Rome has the admirable characteristic of equal durability throughout. The endeavour to reproduce that characteristic in modern buildings is the expression of the influence of durability on their lines in the ordinary way. For it dictates, to a certain extent, the use of only one material on an exterior or, at the most, two of equal durability; and that creates a certain uniformity in the treatment of the elevation owing to the repeated effects, under certain conditions, of structural details carried out in the same stone or the same brick or the same pieces of terra-cotta.

An extraordinary demand for durability, such as occurs occasionally when a monument has to be erected to last an indefinite time, has a double influence on the arrangement of its lines. Firstly, it necessitates the choice of an imperishable building material, which means a certain appearance of hard flatness—like the sides of the Pyramids—due to the actual immutability of the substance of the stuff and our natural disinclination to carve it with high and elaborate relief; and, secondly, there is a slight appearance of severity due to the actual suppression or even complete

omission of features like cornices, string-courses and projections exposed to the effect of wet and frost. Deliberate ornament too is thickly bunched and protected, and the roofs—if there are any—look small and tight with shallow eaves to escape the wind.

There is a tower on the coast of Fife [1] which has stood for eight centuries unaffected by the gales from the north or the spray from the sea or the whirling mists which shroud it. It is a plain square tower built of hard blocks of glittering grey sand-stone, and its four walls, a hundred feet high, are only pierced by a tiny door and four Saxon windows—mere slits with arched heads. There are no other lines but these in the whole of its design; yet this hard grimness seems more suitable and its architecture seems better in this place than the French Gothic fragility of the cathedral next it, which was built, flourished and fell, while the tower of the more ancient church added a few crystals to its stones.

VI

Strength and durability are simple, obvious and fundamental necessaries. They are, as well, constituents of the vital matter of shelter, the demand for which prompted the very beginning of building. When men found insufficient protection in caves and collected materials to construct something more commodious, their

[1] The Chapel of St. Regulus, St. Andrews.

first object was shelter; and—as I have already said—when they took pleasure in the look of these habitations, then architecture began. Hence we may say that this demand for a protecting and permanent covering is the most basic fact in our whole subject. There are indeed very few buildings in which its influence is not vividly apparent. Even in those which are purely decorative monuments there is an arrangement somewhere of a line or two suggesting protection in one form or another. Shelter really means—in the ordinary sense—the enclosing of space by building for cover. It postulates the erection of walls and their connection together by an impervious roof; then, inasmuch as these walls and roof are expected to be strong and lasting, the two essentials of strength and durability are auxiliaries to the principal one.

Now this affair of putting up walls and connecting them strongly with a roof has been the chief concern of architects ever since they started work. Always while we draw a plan we wonder how we shall roof it. If, of course, we are allowed to have a flat top to our building, and if some durable material like reinforced concrete is available, the problem is easily solved; but if we intend to have a pitched roof which will be seen from below to any extent our scheme for its construction will have a vital influence on the design of both the plan and the section of the whole building. In an E-shaped house, for

instance, who has not been tormented with the effort to make the projecting wings of equal width, not so much because one end wall might look broader than the other but because the roofs, being pitched at the same angle, would have their ridges at a different level? We may rectify this by lowering the eaves of the broader wing until the ridges are level, but that might make the rooms inside too low and so affect the section of the house adversely; or we may decrease the angle of the pitch on the wider wing so as to regulate the ridges; yet if we do, not only would the house look unbalanced, but the protective efficiency of the flatter pitched roof would be reduced. It would throw off rain and snow less effectively and the value of that wing as a shelter would be diminished. Thus are the problems in the lines of plan and section inextricably woven in our endeavour to create a pleasant-looking shelter.

Again, we all know that internal valleys on a roof are things to be avoided because they collect snow that no one can reach to remove. The result is that moisture in time penetrates the lead covering and a leak in the roof is discovered. It is on this account that some of the great buildings of the Renaissance have not the architectural merit of their predecessors. It appears that their roofs have been left to be dealt with after their plans and elevations have been decided on, so that the cost of the repair and

upkeep of their hidden valleys, sunken flats and ineffectual drainage becomes an increasing burden on their owners. These buildings were rarely if ever considered primarily as shelters, which of course they were. Their architects spent themselves on the design of delightful rooms and fascinating fronts. They hoped, I suppose, that the edifices they made would be roofed somehow, and—if possible—in the most invisible way. In doing so they failed to a certain extent to fulfil completely the material requirements of their work. You cannot in any occupation so disregard a basic fact without giving trouble.

We can trace, however, all through the thousand years from the fourth to the fourteenth centuries the advance in successful experiments to meet this requirement and its dominant influence on the design of all the buildings of that period which remain to us in Europe. We see it in the heavy ribbed vaults of the Romans, then in the round saucer of the Pantheon's roof, which dictated a circular plan because no one then knew how to transfer the weight of a round roof to a square walled space. Then we see it in Justinian's stupendous dome at Hagia Sophia, the support of which on pendentives and abutting barrel-vaults and semi-domes completely settled the disposition of the plan. That whole church is a roof and the vast amplitude of its interior arises from the brilliant emphasis on this first essential in architecture. The mosaic canopy of

the cupola and its subsidiaries is the completest fulfilment we have of one material requirement. It is, as it were, the apotheosis of the idea of shelter.

Then there was the continuous effort made in Europe by mediæval builders to cover with stone roofs the enormous congregations which the Church attracted. Beginning with the narrow vaults of Lombardy the idea was developed in Germany, France and England and led to the Gothic vault and the Gothic section which we know. And such was its success that one might almost say the occupation of most of the craftsmen in central and western Europe, during the thirteenth century at least, was that of protecting with beautiful and lasting shelter the ritual observances of religion.

Roofing, simply, has therefore always been—most obviously—the principal way in which the demand for shelter has expressed itself. That is, protection from the elements and durable imperviousness to them has ever been the quality insisted on. The construction and support of this stone, brick, concrete, slate, tile or lead umbrella—so to speak—is the problem through the solution of which this essential acts effectively on the lines of section and of plan. But there is, as well, another way in which it acts, analogous to but not the same as this more fundamental one. I refer to protection of the parts of a building itself by other parts, which is distinct from the

sheltering of its inhabitants from the elements by the whole of it. This, too, has had a very strong influence on the arrangement of the lines of many of the ordinary ingredients of architectural design. A cornice immediately suggests itself—a thing invented to stop the water from a roof running down the surface of a wall. The stone mouldings known as hoods elaborating the lines of Gothic arches by emphasizing their outer edges had their origin in a similar form of protection; they caught the rain driven on to the wall above a window opening and dripped it off before it was able to trickle inwards to the glass; and porches, which can be such delightful features on a house-front, both shelter people waiting at a door and protect the door itself from driving rain and snow.

Moreover, the placing and disposition of sculpture on the exterior of buildings comes under the influence of shelter, and its quality is affected by the protection which parts of the main structure can afford it. That is, we expect to see thickly elaborate carving beneath the slope of a pediment or in the tympanum of an arch because they are naturally sheltered places; but we are surprised to see it spread across the most exposed surfaces of a building because, once more, it suggests waste—a failure to make use of the protective forms which architecture has developed, forms which provide cover for ornament and guarantee its life as long as theirs. For deeply

undercut sculpture cannot, by its nature, be expected to last without shelter the same length of time as plain walling. Rain and frost, snow and wind combine to attack and crumble it. Therefore, if we see a keystone, delicately carved into flowers and birds and ribbons, projecting from a hard and otherwise plain north front, we may enjoy its appearance inordinately, but we are sure to regret its inevitable early death from exposure. So that I shall not say we should but might reasonably suggest that it seems we ought to use such a keystone only when the arch which it tightens is recessed within another arched or square protective opening. That, however, would involve a dent in the plan of the wall in question and probably waste space within it, so that we have to choose between a demerit in the plan or the cost of periodical renewals of the keystone or we must face the fact that we cannot have it carved.

A second way in which the influence of shelter affects design is discernible in the arrangements made for protection from heat. All the arcades in the streets of hot countries are derived from this, and their adoption usually has the troublesome effect of creating houses with more area on the upper floors than on the ground. This desire for shade is the origin as well, I suppose, of that great architectural form—the colonnade in front of a wall—and the far-reaching cornices of India and the East have developed from the wish to

make the rooms below them a little cooler by flinging a shadow across their upper walls. There is a definite influence from this as well in some purely structural matters such as our modern hollow wall, which seems to keep a house cooler in summer as well as warmer in winter than would a solid one of equal thickness; and where steel is exposed to heat, allowance has to be made for its expansion, or we case it with non-conducting materials built up to shelter it.

Thirdly, we have shelter both for security and privacy. In the first case all the protective contrivances ever evolved take their share in the disposition of the parts of a house, and the demand for safety is met by such items as the placing of a porter's lodge for the proper supervision of an entrance, the size and inaccessibility of ground-floor windows, the height of gates, and—in military works—the actual thickness of walls to resist bombardment. This last was the practical demand with possibly the most powerful influence of any on the plans and sections of walls in a mediæval fortress. Strength to resist the battering of an assault and therefore security and shelter from an enemy was the first object of their existence. In the details of architecture, too, this influence is apparent. A massive door involves certain forms of structural joinery and a heavy steel one demands extra strength and thickness in the walls to which it is hung. The provision of locks and bolts and bars, of grilles and shutters—

the essentials of security and the minutiæ of design—is included in the material requirement of shelter.

Lastly, privacy in domestic buildings, especially in England, is a matter of some importance. That is to say, shelter from curiosity, from the street, from neighbours and from interruption of one's leisure. The expression of an insistent demand for it appears in the plans of thousands of small houses. Arrangements are made in them, for instance, to provide an additional exit (or means of escape) into the garden other than by the front door (where an unwelcome visitor may be standing); similarly the loggia or verandah is almost invariably at the back of a villa so that the owner of it may take his ease therein without exciting comment from the road. And in larger houses the privacy of the occupier's own suite in relation to the other rooms and the separate privacy of the servants in a well-planned modern residence are both clear instances of the working of the demand for this kind of shelter on the lines of plan. Another—and a final one—is the desire for protection from sound and shelter from the irritation of noises from the street, the next-door piano or the romping of one's children. The question of muffling these is being increasingly studied, but, so far, they have been only partially overcome by the use of insulating materials in walls and floors and the intelligent use of double windows.

VII

The influences of the necessity for light and warmth and salubrity in buildings may be examined together. They are all, in a sense, augmentations of shelter, though the provision of light is first made by piercing holes in the walls and roofs put up to cover us.

It is true that the Romans made a round orifice in the top of the dome of the Pantheon through which all the light enters as well as any rain that may be falling; it is also true that houses and castles in the Dark and Middle Ages were often lit by mere unglazed slits in the walls, and there may have been no light in a Greek temple beyond what came through the door; but in a survey of the whole of architecture, we may safely define natural lighting as the admission of the rays of the sun into buildings through a transparent material having a durability—if not a strength—equal to that of the walls of the building it illumines.

The principal point to note in this matter is the great diversity in the amount of light required by different kinds of buildings. A physical laboratory, for instance, demands very much, a church far less, and the auditorium and stage of a modern theatre need none at all. This variation in the demand for daylight explains to a great extent the difference in the appearance of buildings in these three classes. For if a laboratory for

research in electricity—let us say—has to be added to a college, there is sure to be a kind of grim regularity about its lines and a flat squareness in the surfaces allotted to glass for the admission of light. They will, very properly, dominate the design of the elevations of the laboratory, and they will be most likely to interrupt as well the solidity of its slate roof. This building will not be able to escape a sharp contrast with the college chapel which—let us imagine—adjoins it, because the religious building will have far more stone surface than the other, and possibly buttresses on its elaborate flank with small windows between them through which a modulated light reaches the interior. Hence, if it were possible to build the new laboratory in a position where it was not seen in relation to the older chapel, there would be more harmony in the whole group of collegiate buildings; but, assuming this cannot be done, the violent contrast I have pointed out is bound to exist and illustrates one way in which the influence of the demand for light in various degrees can affect the general plan and lay-out of a group of edifices. It would be still further illustrated if we went on to imagine that a small theatre was added on the other side of the laboratory. As this would require no windows the contrast with the research building would be complete. I do not doubt that most of us would arrange its lines so that there appeared to be windows on its exterior, or,

at least, niched shapes which balanced the openings for light in the laboratory; and that is an example of the influence of a material requirement being so strong that we are unable to resist expressing it in places where the actual requirement does not exist, in order to maintain an appearance of harmonious unity. Whether it is right or wrong to do so is not the point at the moment. It is sufficient to note that this artifice is often employed.

As I have said, openings for light are made in the protecting coverings of walls and roof: and these apertures may be divided into windows and skylights. Generally speaking, and, except when a top light is especially desired, the latter are only installed when the former cannot be, for the sensible reason that openings in roofs, however admirably glazed and rendered watertight, begin to fail to protect the inhabitants of a house much sooner than openings in walls. Hence the more a skylight resembles a window, the more protective will it be. That means making it as vertical as possible, which can only be done in a steeply pitched roof; and that of course is a big demand to make on the section of the house to meet the requirement of overhead light. Still it is wise to meet it and to let our design be influenced by this demand.

The introduction of daylight has a powerful influence as well on the arrangement of the lines of plan in individual buildings. Supposing we

have a square site on which to build a block of flats, say 300 feet each way, and assuming that every room must have daylight admitted through an outside wall, we find we are forced to design the block either in the form of an H or an E, or a hollow square. In doing so we naturally reduce the area of habitable room to a great extent, but the admission of light insists on it and is wisely supported by the law.

Another instance: supposing we had to build a row of palaces like those in Venice, where each building is separated from its neighbour by a narrow street or canal. Imagine that there are to be three great rooms on the principal floor on the front. It is clear that those on each side of the central one can be partially lit by windows to the side, but that the big hall in the middle can only be lit from the front itself, with the result that we get in as much illumination that way as possible by grouping its large windows closely together. This produces the happy effect which may be seen on the Spinelli or Vendramini Palaces on the Grand Canal where the group of arched openings in the centre is balanced on each side by a more solid wall surface with one window in it, presumably at the end of a big room at right angles to the central hall.

Again, let us suppose that in an institutional building, it was vitally important to provide a square hall on the ground floor and in the very centre of the building. Let us assume that it

could receive no light from any outer wall or even from an area. We are forced then to raise its ceiling to the very top of the whole building and construct in it a glazed cupola. This has, firstly, a pronounced effect on the section of the whole interior and, secondly, it practically dictates the general arrangement of the plan on each floor by insisting on the square galleried void in the centre. This is a common though an extravagant submission to the influence of a material requirement.

Lastly, there is that exaggerated opening for light—the shop window. It was originally a means of illuminating the interior of a shop. Then, I suppose, some one thought of displaying in the window a few samples of the wares which were sold within. The idea was most successful and the advertisement achieved without any cost led naturally to an expansion of the windows to what they have now become—mere glazed recesses in the outer walls of an emporium at which the public may delightedly gaze without feeling impelled to make purchases. And in recent years the occupation of window-gazing has become so general amongst us that it has been necessary to sweep away the entire ground-floor walls of most of our millinery establishments and replace them by a continuous show-case exhibiting bargains. Thus there are buildings in our streets offering an appearance of complete structural impossibility and the worst architecture

ever perpetrated by man since he left his caves. For there is no indication in them of an attempt to adjust our desire for beauty to the material requirements. The one is abandoned wholly in favour of the other and is insulted by an agglomeration of rotten ornaments offered vulgarly as a sop to elegance. Mercifully, however, there is already a reaction. We have, on the one hand, those severe and sometimes stately buildings made of steel frames encased with stone and quite obviously so, and on the other hand we have the beginning of a general recognition of the fact that our most important buildings—the shops—should at least look as if they might perhaps not crumple by the bulk of their weight the supports which divide the transparent walls of their lower stories.

This fierce conflict between the two elements in architecture which is working itself out in the streets of London provides a continuous performance from which we may draw the best possible illustrations of my thesis and note the double action of our occupation with its ceaseless struggle to create a happy blend.

Warmth in buildings is something added to shelter for extra comfort. After walling ourselves in and putting a roof over our heads, and after making holes in the walls and roof for light, the next obvious step is to raise the temperature of the air within the dwelling.

This matter of heating the interiors of buildings

has naturally become an important one only in northern countries where the severity of winter makes it necessary. In Egypt, India or Mexico the influence on architectural lines of the demand for warmth has been small; but in England or North America, or in Russia or Germany, ever since the early Middle Ages, there has been this problem added to all the others which have to be solved so that architecture may give the fullest content. Compared to the others, however, it is not a complicated one, and we can trace its influences readily. For example, an open fire in a room demands a chimney. That means a flue running up a wall and projecting above the roof. As there are usually a number of rooms with fires in a house, we endeavour to group the flues as much as possible for economy in brick and for material support and protection where they emerge from the roof. But grouping the flues is a matter which has a very strong influence on the relative placing, in plan, of all the rooms in the house. Moreover, you can only put a fire in certain positions in a room; that is, it should be so placed that people sitting round it are not in a draught, are not liable to be knocked on the back by an adjoining door opening behind them, and are in a position in which they can see to read or work or cook—in the case of a kitchen. This will probably have a cross-effect on the placing of windows in a room and so effect the plan of the outside walls of a house and therefore its elevations.

Again, in a gravity system of heating by hot water, it is essential to provide a boiler house at a lower level than the ground floor, with proper access to it. This has a small but important influence on the lines of section of a building. Also, in a house definitely designed to be warmed by radiators, we find—in the best work—that their placing and disguise with metal, wood or marble casings is an intricate affair which demands careful and separate study in each room and has a definite effect on their plans. Nevertheless, if we use the latest invented panel system of heating in which a gird of thin pipes is buried in the plaster of a ceiling, we will find it has little if any influence on the design of the room which it warms. It is therefore hardly an architectural affair at all but an engineering auxiliary like the machinery of lifts or electric light or bells and telephones. Our work cannot include profound and expert learning in all these accessories to its fulfilment, but the knowledge of how and when to use them and where to put them is naturally expected of us.

Much of the material which comes under the head of Salubrity—as I have named it—is also engineering brought into the service of architecture. It includes ventilation, water supplies and sanitation. Many of the details of these are arranged for us by laws and regulations which have to be complied with. They stipulate, for instance, minimum heights of rooms for purposes

of health—a very direct influence on the section and elevations of a building. They control our supplies of water and tell us exactly how to construct our drainage.

Most pipes in a house are invisible, but there are some essential to sanitation which run down the outside of a building and often mar by the strong verticality of their hard, smooth lines the delicately adjusted composition in stone or brick to which they are fixed. Hence we try always so to place our sanitation in a plan that its waste-pipes to the drains may be on an inconspicuous wall. And, as well, the apt grouping of these things on a floor of a dwelling, concentrated in such a way that they may be served by the least number of pipes, is a consideration for the sake of economy which we are bound to follow. The endeavour to do so, then, has a predestined influence on the lines of plan.

CHAPTER FIVE

THE ADJUSTMENT

I

THE preceding chapter offers a mere sketch of the more ordinary practical demands which have to be satisfied if architecture is to give the content which it should. I have not tried to classify or to catalogue every conceivable material requirement which may ever have to be met by an architect or has ever been encountered by one in the past. The sketch, however, may be broad enough to suggest both their number and their importance to my reader. Then, in the two chapters before that, I discussed at some length the desire for beauty which we are supposed to possess and are expected to cultivate; and in the first chapter of all I pointed out that good architecture was that arrangement of the lines of building which, controlling by reason the practical matter and by taste the æsthetic affair, mixes the two in their due relation and thereby forms a successful blend or coalition. It is therefore time to examine that blend and compound the thoughts in all the previous pages.

In order to simplify and accelerate that process a little, I must refer again for a moment to the material requirements and their fulfilment; because, if the idea of the element in architecture which I call the desire for beauty may have crystallized itself in my reader's understanding into a single thing, there may be in the idea of the other element—the practical one—a conception of a group of unrelated factors or of a mere collection of things which act independently on the first element. I have previously used the phrase "a synthesis of sound building", and it is that which requires a little deeper consideration. For the practical matter is something more than the erection of a strong, durable and impervious shelter, warmed, lit and drained. These demands for strength, permanence, warmth, light and sanitation are closely interrelated in their effect on the shelter which they augment and qualify. It is an interrelation which is always completely governed by one thing—adequacy. The shelter we put up, itself sufficiently impermeable to rain and snow, must be of materials strong enough and durable enough to support themselves for an adequate length of time: the heat we provide must be enough to warm the interior of the shelter to a degree sufficient to counteract the cold outside, to repel it coming through the walls or apertures for light, and—as a rule—to make indoor life in winter as warm at least as outdoor life in summer: the light let in must be adequate

for all the occupations of the inmates to be carried on without strain on their eyesight: the water supplies must be abundant enough for all purposes: the waste-pipes must be of large enough diameter and the rooms high enough for health. That is, the control of reason may be described as fulfilling the material requirements with exact adequacy and no more. Obviously anything less means failure and discontent; and equally obviously anything more means waste and irritation. For an overheated room is a source of discomfort, just as one which is too high feels cold and gloomy. An apartment of any sort with too many windows lacks privacy and we feel exposed to the eyes of the world. A solid stone staircase in a small brick house may, of course, last for ever; but it would outlive the house and so become waste, besides being tiring to walk up owing to its unnecessary hardness. An over-large cylinder for hot water, too, demands constant, exhausting and expensive stoking of the boiler; and elaborately multiplied electric light switches behind a door, instead of only the two or three which are adequate for controlling the current, offer an excellent instance of things which, by being overdone, become an incessant irritation. Hence architects aim at a synthesis of all these in which none destroys the practical value of any of the others or lessens its sufficiency. We mix them in the mortar of knowledge with the pestle of experience, and we unite them to form a

compound of adequate richness, suitable and convenient. It is then that compound which is subjected to the flame of our desire for beauty.

Note the difference between the two elements as regards their essentiality. The one is clearly a definite obligation, but the other conveys the notion of something arbitrary depending on a longing which *may* exist and *may* find satisfaction. That it does either is only probable, while the existence of the first element is imperative. Beauty is not a necessity like strong foundations or hot water in a bath. It is a thing which some people are totally indifferent to, a great number rather vaguely enjoy, and a few look for more than anything else. *Must* it be an essential element of architecture? I contend that it must—that there has to be at least a suspicion of it in the most severely practical buildings, and that, unless their lines are arranged even only a very little with the object of being agreeable to the eye as well as satisfying to the intelligence, that arrangement is not architecture but only excellent construction. Take the case of a modern scientific or commercial man who says he wants a house built but adds that the appearance of it does not interest him in the least. The only essentials are comfort, great convenience and perfect mechanical equipment. There must be no frills, no ornament, no projections even: he wants a square house—like a box. I maintain that the good modern architect will give him all that, but

at the same time he will create a design which, though a little grim, will have a certain æsthetic value for him and others if not for the owner of the house. This will be found in the happy proportions of the window spaces, in the look of symmetry and balance in the principal façade, and in the admirable focus at its centre formed by the door with its strong hood over it which he will explain (with suppressed delight) is essential for the protection of callers. There will not be much of the fun of creating form in such a work, but there will be the equally thrilling game of *bending* necessity for the sake of appearance without impairing its practical value. That is, in fact, the real attraction of our occupation and the explanation of its ever-varying interest. And I maintain, too, in such an instance as this, it is not our business to make our client an artist, but to make him comfortable is of primary importance, while *in doing so* we produce something which will be agreeable to passers-by if they look at it. We must try to do that or we are not architects. And we must succeed in doing it to be good architects. The rule that the opportunity to improve an appearance must be taken, if it can be done without in the least detracting from the value of a structure as the fulfilment of material requirements, is the only one I intend to promulgate in this book.

Yet this obligation—as it then becomes—to gratify our own desire for beauty, as far as we

may, finds a certain encouragement in the very excellence of purely satisfactory construction: and this is one of the most entangled points in all the twists of this most knotted subject. For there is indeed a kind of unconsciously achieved æsthetic value often discoverable in really well-made but entirely utilitarian objects. They seem to possess a hint of the beauty which is manifested in nature—in mountains and flowers and beasts and human beings. It arises, I think, from the providential fact that the simplest and most direct way of making an object of any sort often produces an effect in the look of that object of at least unity and sometimes—though more rarely—of elaborately harmonious unity. That is, the thing looks well-knit and is agreeable to the eye as a complex shape, regardless of what it is or what it does. Yet its purpose is displayed as well in the powerful and intensely just significance of the shape its lines combine to assume. It cannot do otherwise, because the dictation of utility is omnipotent and there has been no extraneous desire for beauty admitted to act on it. Thus if its form is significant, like—let us say—that of a dagger, it is bound to be adjectively right and to look as if it could do what it is supposed to—namely, stab. A dagger can *be* useful; it can look useful; it can look beautiful and be very beautifully useful. But what we want is one which is piercingly sharp—and looks beautiful by having a sufficiently pleasant shape whenever

we happen to glance at it. We expect its form to be significant of its purpose—in fact, we know it will be, but we cannot be certain that it will have a pleasant shape. The significance is more or less inevitable in such simply useful things, but, by itself, it does not make the object beautiful. A very unpleasant shape in a dagger, in fact, would probably make its appearance more significant. There are things which are made with a wholly utility object and there are other things which are creations of visual art, which is the display of harmonious unity in form, probably with some significance, but not necessarily. Usually they possess it in a right or a wrong relation; and often the useful things display harmonious unity in their form through the unconscious skill of their artificers. But there is as well a third class of things which are made first with a utility object and can be used, without damaging the achievement of that object, as vehicles for the display of visual art. In this class, in varying degrees, are buildings, and architecture works in all three spheres, unlike that engineering which devises ocean-going liners and only works in the first, yet creates things of universally accepted beauty—of such beauty, in fact, as to induce some architects to give up trying to create it in their buildings and to allow the whole appearance of them to develop from their structural problems—a healthy but a rather barren experiment.

These ships happen to be beautiful because so many things vital for their efficiency happen, in conjunction, to be of such an appearance as provides æsthetic value. In order to float, for instance, they must be balanced properly, so that all the details of their equipment, some of it much repeated, is bound to look exactly counterpoised. So we enjoy it. Then, because for technical reasons it is better to have the engines half-way down the length of the ship, there is a look of approximate balance of everything between the bow and stern when looked at laterally and, as well, a strong climax of intricacy in the funnels at the centre, emphasized by the bridge, the masts and all the apparatus of control. Then, of course, the sharp line of the bow, the slim length of the hull, and the slight tilt backwards of the funnels are very significant, and all suggest the possibility of speed and a powerful slithering agility to resist stoutly the shocks of the wind and the sea. And note that there is not a line or a curve or the shape of a bit of colour even in the whole ship as seen from outside which is not dictated absolutely by utility, by fitness for its purpose of floating across the ocean.

But need we note the same thing in a house? Is it not true that, because providing a comfortable shelter on land is much less difficult and dangerous than creating one which rushes across the water, the dictation of the structural problem is much less despotic? Are there not far more arbitrary

elements in it? Take a window, for example: there is no risk of the shelter being less complete if the opening for light and occasional air is 9 feet high, and not 8. Yet that extra foot may make all the difference to the appearance of the outside and its omission may completely destroy the good proportions of its composition. Or let us suppose that the kitchen at the west end of a mansion is balanced on plan by two small sitting-rooms at the east end: will it appreciably affect the convenience of the house if we squeeze the two little rooms into an area exactly equal to that of the kitchen, in order to create a balance in the appearance of the front? Or again, if the bulk of the roof—but not all of it—had to be high so as to enclose a group of cisterns, are we not justified in inventing an excuse for a possible boxroom in the rest of the roof raised to an equal height, so as to level the ridge and emphasize the unity of our design? But you cannot bend necessities or play with the indispensable shapes of parts of a ship in this way. It would fatally affect its stability and possibly sink it.

Yet there are buildings which belong very nearly to the category of engineering works. Most factories do: and inasmuch as the practical element dominates their design, so does their appearance have to depend more on the rather innocent beauty which *may* be unconsciously achieved by purely satisfactory construction, like a ship, and less on the deliberately adjusted

arrangement of their lines for the sake of beauty. We have this possibility always to fall back upon —hence our encouragement: and it helps us by enforcing a kind of restraint and imposing on buildings a look of reticence and simplicity with which we may play a little but may not complicate. It is a fundamental asset when we are designing a dwelling for the kind of man I have mentioned who insists that the appearance of the building has no interest whatever for him.

It is apparent then that the purpose of a building has a great deal to do with the relation of the practical matter and the æsthetic affair in architecture. It is liable to dictate their proportionate activity in the arrangement of the lines; and this dictation is guided by what we might call the position of the building in the scale of utility. Where appearance is very important—where an edifice is expected to look delightful and splendid because of its position or its value as a monument—then the æsthetic element, the desire for beauty, will be found to have a greater claim to consideration than the practical element. I do not mean at its expense, but the machinery of beauty will be worked harder to create a rich effect in that arrangement of lines which most adequately satisfies the material demands. On the other hand, where any appearance of value is almost impossible to achieve owing to the cramped position of a building and the dull humility of its purpose, the practical element will be found to

so dominate the other that no more approach to beauty is attempted than a general look of decency in its lines and a chaste repose in such parts as are ever likely to be looked at. An office building in the narrow street of a commercial town has perhaps as low a quota of the æsthetic element and as high a quota of the practical element as any kind of building of the present time or any other. Its external appearance is negligible because its front can only be seen in acute vertical perspective from the opposite pavement a few feet away, and no one ventures to stand and lean back in the busy thoroughfare to look at it. The apartments inside are expected to be nothing more than "light and airy" looking. They are plain clean cubic spaces with no elaboration except an occasional mantelshelf and perhaps a picture-rail. But the material requirements throughout it are fulfilled with the maximum effect of adequacy, and the heating, lighting, lifts, sanitation and ventilation are all expensively efficient. It is improbable that any inhabitant of such a building would be the least distressed if the main entrance was ill-proportioned, but he would be intensely annoyed if it was a little too narrow. The design of the lift-cage might be quite pleasant and the only feature in the building in which the desire for beauty found any outlet. But only one man in a thousand would notice its charm: the speed of the lift itself is the thing that matters. And I do not

think we should show too much contempt for this attitude of mind. It is not our fault that this is an industrial age or that city life moves at such a speed there is no opportunity in people's existences in it for the delicate apprehension of sensuous beauty in architecture. Rushing daily from house to office or workshop and back again, a man has no time and is probably too harried to search for beauty in his surroundings, and especially above his head. Hence to-day out of every hundred modern buildings in a town only six or seven are even expected to offer any æsthetic value by the majority of people, and architects make a mistake when they try to induce the public to swallow bad æsthetic effects in all the buildings they put up regardless of their object. The public would be just as happy with perfect efficiency combined with a reticent look of abstract serenity achieved by subtle proportion of mass and a certain cleanness of line. That is quite enough for an ordinary business building, though a bank might go a little further. Yet even in that case a kind of restrained beauty with a significance of secure strength is preferable to a complex and voluptuous beauty signifying the less pleasant side of wealth.

It is inconceivable, of course, that the practical element in architecture should ever be sacrificed for beauty. If it is, I am sure that architecture is bad; for no building has ever been asked for unless some definite requirement in the way of

sheltering somebody or something prompted the demand. Even the arch on Constitution Hill, through which no one is allowed to drive except Royalty, endeavours to excuse its existence by providing quite a commodious lodging for a park official behind its columns: and Beckford even, when he built Fonthill like a ruined abbey, because he preferred a ruined abbey to a modern house, lived in it until the tower fell in with a real and terrible tumble. Our whole existence as architects is based on this demand which has ever been made for useful buildings: but, because —I suppose—they are such visibly prominent things, there has always been as well a concurrent desire for at least decency in their appearance and, at periods in history, an insistence on a certain standard of beauty in all of them. And it will be noticed in the Greek period, for instance, or in the thirteenth century, when this desire for beauty seems to have been most clamorous, the *scope* of architecture was very limited. The first period produced almost entirely temple architecture and the second period is exemplified almost wholly in churches. We do not hear about Greek houses much or do we discuss excitedly the designs of Gothic swimming-baths, though both may have existed. The result of this limitation is that all the buildings of either period had only one purpose, and there arose not only a marvellously perfect coalition of the practical and the æsthetic, but, with long practice, intense skill

and devotion, the desire for beauty was more and more satisfied within the envelope of that coalition until—in the Greek case—it withered from natural aridity and—in the Gothic case—it burst with the overreaching ambition of the Beauvais Cathedral-builders. The opportunity which occurred in both these periods to develop an architectural type to perfection, compared to the occasions at the present time when buildings are asked for which have not been demanded before, is often disregarded when modern architecture is contrasted unfavourably with Greek and mediæval. That is, if our tube stations had been designed with fervour and rebuilt regardless of expense every fifty years since the time of Queen Elizabeth, posterity would probably extol those appearing now as much as we praise and magnify the remains on the Acropolis or the Cathedral of Reims.

The extent of the scope of utility in architecture then has a bearing on the relation arrived at between its practical and æsthetic elements, and I shall refer to this later. But just here we should note that different periods in the history of our work provided wider or narrower fields for the display of our abilities in adjusting the two elements in a ratio properly due to the purpose of the building; and it is from a period with a wide scope, like the Roman, that we may take some examples to illustrate this ratio.

The first is an aqueduct built by the colonizing

Romans at Nismes in France and now known as the Pont du Gard. It is about 880 feet long and 160 feet high where it crosses the valley of the Gardon. It is built entirely of stone and consists of a lower range of six rather flat arches with a depth almost equal to half their span, and there are, in addition, breakwaters to the piers. Above this there is a second row of ten arches, the central six of which correspond to the six below, and the rest—at each side—bridge the remainder of the valley, which, at that level, is much wider owing to the long slope of its banks. This second row of arches has an average height of nearly one and a half times the lower row; moreover, they are complete semicircles and their piers are only about three-fifths the depth of the lower ones. Thus in every way this arcade is lighter and more slender than the other. Finally, above the second tier there is a third series of thirty-five small arches, on very short piers, spanning the same breadth of valley as the ten below. With the 12 feet or so of masonry above them and the restrained projecting course of moulded stone surmounting it, they are in height only one-quarter of the arcade below and between a sixth and a seventh of the whole elevation. Their piers are again a little narrower than the middle ones and much narrower than the lowest.

Now this is almost an engineering work; but it is as well a notable architectural monument. The essentials of beauty can be discovered in its

appearance. There are the repeated arcades and the horizontal repetitions of six, ten and thirty-five arches. Then, as the river flows, when it is not in flood, only through the second arch from the left in the lowest tier, that arch is made about a quarter wider than the other five, and the one above it corresponds. So there is almost—though not quite—in the centre of the valley just enough emphasis given to a point on the aqueduct to form a focus or gentle climax on each side of which the remaining portions balance sufficiently to satisfy the eye. Also, as we look at it, the proportions of the three principal heights, marked by hard ledges, seem admirable; and the top arcade, owing to the much greater relative number of its little arches and its lowness in relation to the whole, gives the same effect as an entablature or cornice does to a long range of columns to a wall. Thus there is a simple but strong look of harmonious unity in this building, achieved entirely by adjusting with subtle intelligence and taste the arrangement of the lines of masonry required for carrying water. There is no enrichment at all: the lines of structure dictated by the material requirement of conveying water at a high level across a valley are simply bent a little to please the eye by the shapes they form without detracting from the water-carrying capacity of the aqueduct. The architect knew that it was worth doing this and thereby transformed a purely utilitarian work into an achievement of

art with the greatest economy of means. And it is because of this economy we admire the architecture of the aqueduct: the means employed to satisfy the desire for beauty are evidently in the exact ratio to the practical fulfilment of the building's purpose which its position in the scale of general utility indicates.

Now consider the Colosseum at Rome. I suppose the dominant aspect of this is the appearance of the interior with its three great tiers of seats and the encircling columned gallery surmounting them. There is, however, an aspect which is almost as dominant and is more valuable here to illustrate my point. It is the look of the outside wall as you walk round it. The very continuousness of it gives a kind of unity: but as you can only see, as you walk, one section at a time—and that in acutely curving perspective, we may justly examine such a part and treat it as a single exhibition of architecture. We have a wall like a cliff, almost 160 feet high, built of stone, with a rather meagre cornice on the top. It is divided firstly into two parts, unpleasantly related in proportion, as the lower is rather more than two-thirds of the whole. The greater part, however, dominates the less decidedly, so that there is not the irritation of an unresolved duality to distract us. On the other hand the major part of the wall—the lowest—is again divided into three tiers of arches exactly superimposed and of almost quite equal height, giving a look of dull

repetition without value. This arrangement is more harmless than ugly and seems to have been dictated by the three equal heights of the tiers of seats inside, which, I suppose, were insisted on by the inaugurators of the amphitheatre. Thus the architect was unable or perhaps he was afraid to twist this material requirement a little and express that twist in his outside elevation by a pleasantly proportioned inequality in the heights of his arcades in a similar—though a less pronounced—manner than the designer of the aqueduct at Nismes. He has, however, partially relieved the monotony firstly by making use of the structural necessity of an increasingly thick wall towards the base and by displaying this aptly in the reveals of the piers of the arcades; and secondly, he has enriched each pier by the definite articulation of three-quarter columns at the centres of the piers, joined by continuous entablatures running round the whole building a foot or so above the heads of the arches. He has also contrasted the three rows of these columns with each other by detailing them, from the ground upwards, in the Tuscan, the Ionic and the Corinthian manner: and he has added a little more variety to the three by making the two upper orders only stand on a continuous plinth, in each case resting on the cornice immediately below. This was necessary, I understand, because the vaulted corridors behind the two lower arcades rose above the levels of the corresponding

cornices outside: and the architect wisely seized this opportunity to make a necessity help the appearance of his work. Lastly, the upper portion of the wall—between the top of the third arcade and the crowning cornice—had to be pierced by a row of small windows to light and ventilate the back of the roofed-in gallery inside it. It was necessary for these windows to occur exactly half-way up the height of this portion of the wall, and the architect has endeavoured to disguise this unfortunate fact by creating a counter-attraction for the eye with still another row of very shallow Corinthian pilasters, again on a high plinth. Owing to their very low relief, the contrast is maintained between the major and the minor parts of the wall; and because they are just sufficiently rich, they carry from the ground to the sky-line a uniform effect of intricacy. Then he has seized another material requirement to help him by placing, at a really pleasant-looking level just above the windows, that row of strong projecting corbels to which were attached the bases of the masts carrying the great velabrum or awning right across the arena.

We are tempted, perhaps, to say that the designer of the Colosseum just missed an opportunity to create a very great work in the aspect of his outside wall. But would it be a just criticism? After all, an arena with seats round it is a very plain thing. It would be an engineering work to-day; and the wall which

merely encloses it cannot be expected to achieve an appearance of astonishing beauty because the fulfilment of the material requirements is so exacting. It is probable—as I have suggested—that the dictation of the different heights and levels was very rigid and as unrelenting as a modern by-law. The architect may have been a little timid, but he made an attempt to bend the severity of these necessities and a quite admirable effort to soften the ugliness which they strove to force upon his design. In my opinion, he went just far enough in the deliberate elaboration of the structural lines for the sake of richness without overstepping the bounds which the purpose of an imperial stadium suggests. The aqueduct showed pure structure faultlessly arranged for appearance within the scope of its possibilities. This wall shows structure less successfully arranged for beauty owing to the stringent practical necessities, but—chiefly by the apt use of partly imitated construction in the superimposed orders—it gives it a definitely intensified vitality and through its intricacy an approach to a perfectly adequate splendour.

Now let us look at the arch of Constantine, also at Rome. This is a definite monument to commemorate the triumph of that emperor over Maxentius. It had no actual purpose beyond that and certainly has little practical value. The arch is in no sense an entrance, though it has assumed more or less the form of one. Only through that

imaginary material value, then, may we consider it as a work of architecture and not as an exhibition of sculpture.

As my reader probably recollects, the shape of this edifice is somewhat wider than a square, and the proportion of its width to its height is not unpleasant. The elevation is divided laterally into three parts, the centre one of which is about half as wide again as those at each side of it, which, naturally, are equal. There is thus exact symmetry and balance. Then the elevation is divided vertically into two parts at a very satisfactory level by a Corinthian entablature, with a bold cornice, running right across. The part above this—the attic—is treated in the usual way with a plinth and sharp moulded capping: the part below the entablature is pierced by the high and wide central arch and by the two lower and narrower side ones. These arches spring from a quiet horizontal moulded band of stone, and their curves are emphasized by suave architraves running round them, interrupted and held by boldly projecting keystones.

Now such a treatment would be sufficient if the building were merely an entrance, but this is a triumphal arch, and the arrangement of its lines, therefore, demanded the utmost elaboration and emphasis consistent with structural possibility. Hence the architect has gone a step further than the designer of the Colosseum. He has emphasized the piers between the arches, not with

three-quarter columns, but with wholly detached Corinthian columns backed by responding pilasters of the same order and all of them richly fluted. These stand on high sculptured separate plinths, well in front of the main wall face, and their very pronounced projection involves four breaks forward in the entablature running across the building. It is, then, these short jutting portions of the rich cornice which do most to give an effect of strong vitality and some grandeur, for the eight upward jerks of their external angles are sharply significant. They add an acclamatory gesture to the composition most properly, though the effect of it is rather neutralized by the pensive statues surmounting them and the absence of the quadriga on the summit. Lastly, all the spaces between the principal structural lines are enriched with admirably disposed sculpture in low relief, except the centre panel over the main arch, the flat surface of which is dedicated to one large inscription.

This example should make it clear that where the purpose of a building is of very small practical importance, but where a splendid effect is essential, architecture may go, within the scope of an appearance of possible construction, as far as it wills in the arrangement of its forms solely for a look of beauty. The arch is not a building of very notable æsthetic value, but it is related, by its treatment of arcading, both to the aqueduct and to the amphitheatre wall. By its develop-

ment of that treatment, it reaches the last and highest stage in richness of beauty justified by the object of its existence, as the other two did equally in their degree. The three works show clearly, too, how in one place and at one time the nature of the purpose of building has a very powerful effect on design, and how, according to the degree of practical utility of each, the æsthetic factor is regulated as regards its richness and intricacy. We may learn to-day from the sensible Romans to recognize these divergencies, and neither to quite jettison our senses in the hard fulfilment of practical demands nor jeopardize the utility of the work, however little used, by over-elaborating the intricacy of its beauty. Our successful achievement, like theirs, will begin in the able assessment of the buildings we design in the general scale of utility.

II

There is a phrase—"the expression of the purpose of a building"—which is often used in connection with architecture. We are told it is essential that the purpose of a building should be "expressed" in its appearance. Any architecture in which it is not obvious is therefore bad, according to this dictate. Hence all the churches of the late Renaissance period which looked like ballrooms are bad; and, I suppose, all the banqueting-halls of the late Gothic period which looked like churches are equally bad. There is

something immoral in them owing to their lack of truthfulness. How very wicked, then, must be the modern cinemas, which are often "bad" editions of those sinful churches!

I have introduced this fallacy here because I wish my reader to relate it to what has been said in the first section of this chapter. I wish him to recollect once more that truth, in this method of application, cannot be an essential of architecture, because art is concerned with what is not quite logical. It twists and distorts the exactly obvious and practical thing to do for the sake of beauty, and all through the history of architecture there have been different notions as to the degree of distortion which is suitable. Acceptance of æsthetic value from a look of harmonious unity appears to me a constant thing in all periods; significance, too, of an abstract character is always admitted; but it is the applicability of that significance to the purpose of a building which has not been constantly allowed. I have said—because we like it to-day—that the significance should be adjectively just and fitting. A prison should look sombre, a bank strong and a church devotional through the significance of the shapes which the arrangement of their lines provides. But there have been periods when all the buildings put up looked equally sombre, and there have been others when all have looked equally gay, like those frivolous streets in the south of Italy, products of baroque

light-heartedness.[1] But though we cannot understand or like such a general levity as was there exhibited, we need not condemn the architecture, much of which was beautiful. Rather let us appreciate the fact that the temperament of those people was different to ours and that their desire for a lively and dancing jolliness in all their surroundings was so strong they made it the *one* essential character which, through significance, was to be bestowed on their buildings. They varied the intricacy for richness, of course, but however simple or however elaborate their façades were, the lines of them swayed and flowed and sometimes whirled with robust and merry comeliness.

Thus it seems, when we adjust our desire for beauty to the practical matter and blend them in design, that adjustment may be strongly influenced by the temperament of our client and it may even be deflected by his disposition from what we now think is a successful issue. The modern commercial and scientific man I have already introduced is not an instance, because he was definitely uninterested in the look of his house. But such blatant Philistinism is a little rare : nearly always there is a hope expressed that the building will " look " quiet or expensive or elegant or simple ; and the most trying look of all which can be demanded is one of prettiness. Those who ask for it wish what we design for them to have a

[1] At Lecce, for instance.

highly fanciful kind of beauty, with a touch of sentiment in its significance. They say one bathroom in a house is enough but they must have a lot of gables; or, if it is a church, they would like to be able to read their prayer-books, but there must be some Gothic mystery inside like Notre-Dame at Paris (which they recently visited). They may appreciate good proportion, it is true, and they may understand something of the nature of beauty in architecture without being able to explain it, but the achievement of these is less important than a certain mysterious significance due to unnecessary complexity and a deliberate indirectness. Some people to-day still love picturesqueness and adore a look of antiquity, even a false one. They are enchanted if their house remotely recalls that cottage in the foreground of a late nineteenth-century picture—probably called "a Worcestershire hamlet"—a cottage enveloped in ivy, built of oak and wattle and mud, lit with small lattices, obviously damp, very dark within and apparently about to collapse. Yet we must satisfy them and try to give them good architecture even if we are discouraged by the thought that those we are working for do not wish for it. An inclination for sentiment, though quite proper, always seems to inculcate a taste for definite though slight confusion and a hint of muddle, especially in English people; and though we should try to check this taste, it is—I think—no more our

business to make such clients severely practical than it was our business to make the scientific man an artist. We made him happy by providing every material requirement he demanded in a very efficient way. Can we not make these others happy by making them think they have got what they wanted and yet give them good architecture? I have found it nearly always sufficient, in fact, to stress the element of significance in the direction which their temperament indicates and to make the utmost use of it without adopting forms which have value only from sentiment. I mean that a "Gothic" feeling in the interior of a church, for instance, may be more easily contrived by a general look of thin verticality, a lofty and rather sombre roof and tall narrow windows —excluding all views of the earth and only admitting glimpses of the heavens—than by the adaptation to the practical fulfilment of the purpose of the building of any amount of detail copied from Lincoln or Ely. It will be the less expensive way, too, and probably better architecture. Moreover, quite a number of people will think it is exactly like Lincoln or Ely and so be content.

In buildings for this type of person it is obvious that the practical element is not the dominant one it was in the house for a scientific man. We cannot, therefore, depend much on the unconsciously achieved æsthetic value due to directness and simplicity, for it is hoped that we

will not be direct and simple but unexpected and subtly confused. We have to arrange the lines with a beauty of that quality first and fit the practical requirements on to it as well as we are able. But two general results will very likely happen. Firstly, inconvenience—the kitchen will be found to be badly situated in relation to the dining-room or all the bedroom windows will be too low to see out of or the stairs will be dark; and secondly, the æsthetic value of the whole work will be apparent only in places, its beauty will perhaps be patchy and there will be delightful "bits" but an apparent lack of unity in the whole effect. Hence the extreme difficulty of creating a look of deliberate confusion and picturesqueness in architecture without doing bad work, for it involves almost striving not to do what we should.

Just as the disposition of the scientific man tempted us to omit to do what we must, so do these people who demand prettiness—which means a kind of sentimental fragmentary beauty—impel us all the time to adjust the two elements of architecture under the influence of their temperament. To satisfy either of them is good—and in doing so we shall have fulfilled to some extent the purpose of the building; but our architecture will be very good only if the perfection of the blend of its two elements is not damaged in the operation. The happy coalition which we aim at is guided in the action and

strength of the significance in its beauty by the temperament of those we work for, though the exactitude of our aim is often deflected by it too. Our object will be to accept that guidance and straighten the deflection without seeming pointedly to do so. Its achievement will give an appearance to our buildings which will "express" their purpose quite sufficiently.

III

The arrangement of the lines of building may or may not be influenced by the temperaments of those for whom we work. We are sometimes quite unhampered by the necessity of meeting their wishes in regard to the general "look" of a building; and sometimes their insistence on a certain character to be given renders our design of one far more difficult than it is usually, and even threatens to destroy the success of the compound made by us of the practical and æsthetic elements in its architecture. This influence—the temperament of our clients—may then be described as little more than an occasional one, whereas the influence of the purpose to which a building is to be put has nearly always been admitted as a potent one, and to-day, when the range of utility has so vastly increased, its consideration is regarded as vital. But there is a third influence which has always been stronger than these, and, at the present time, it is so dominant as to have assumed an absolute control

over design in architecture. It is the influence of cost. What may be spent absolutely checks at a point all our contrivances for beauty and, as well, our struggles to fulfil quite adequately the material necessities.

There have been, I suppose, some buildings put up in the world at almost no expense. When the slave labour of a conquered nation was available and kings owned mountains of porphyry, the price of a national monument to last three thousand years was probably a hundredth of the price of a workman's cottage built to-day to last thirty. Perhaps whoever was in the position of architect received a salary and one or two foremen were recompensed for their skill, but very likely the bulk of the cost was the upkeep of an army for plunder and the loot of ornament from other cities. It is curious to observe how, the further back we go in the history of civilization, architects were less hampered by the withering influence of the price of building. There are of course still a few places on the earth where labour is relatively cheap and plentiful and materials are fairly abundant on the spot; but even in Africa we build chiefly for the use of civilized people, and it is the accessories of a house which cost as much anywhere as the plain fabric. In out-of-the-way places, too, they cost considerably more. And now that the savage races of the world are more or less subdued, the drawbacks of civilization are universal and the

cost of building established itself last century at a certain level and has ever since steadily increased in most countries of the earth. Possibly in time it will reach a point where no individual will be able to afford to build anything. Then either the State will roof us, our families and our occupations, or the strongest of us only will snatch and inhabit the more salubrious caves.

Now this relative fixity of the price of building at a certain moment and in one country or region is a means through which cost exercises its influence. For if a sum is stipulated which must not be exceeded and the size and accommodation of a building are determined, we find there is a practically complete schedule of materials available with their dependent trades which, when worked together, are likely to construct the building within the stipulated sum. That is to say, if we have to erect a row of six cottages in Middlesex for £3000 we should quite obviously design them to be built in local bricks and tiles in the simplest way by local men ; and we should supply them with joinery made of the cheapest deal guaranteed to last as long as the walls and roofs. We should not interject stairs made of stone from Yorkshire or floors made of Burmese teak because those materials would not be in the schedule which began its list of materials with the bricks made in the county and the tiles burnt in a neighbouring village. If we did we should incur a foolish extra expense and would not be

submitting to a sensible guidance of the influence of cost.

Let us suppose, however, that we had a similar sum at our disposal to spend on a small garden arbour in the same district. In this case we might justifiably choose white marble from Carrara for its walls and columns, thick cast lead or copper for its roof, bronze for its door and mahogany from Cuba for its furnishing. We should select these quite properly from the most luxurious schedule of materials we could find; but again, we would abide by the uniformity of that schedule and would not glaze the windows with the cheapest glass or open the door with a two-shilling handle made of iron.

The price to be paid for a building affects the choice of its materials more than anything, and it is through this dictation of a certain combination of materials related to each other in value that cost exerts its powerful influence. When much money is available we find that we can easily fulfil the material requirements adequately with a large margin to satisfy our desire for beauty. But then, unfortunately, the pernicious influence of wealth nearly always displays itself except in the hands of great artists. For this license to spend provokes a tendency to over-richness in our architecture, to unnecessary intricacy and the piling on of non-significant ornament. A touch of that vulgarity appears which we see in a few of the houses of Mayfair and in some of the

commercial palaces of the City. It is hard to resist this tendency, for if we spend the surplus wealth on peculiarly precious materials, superlative craftsmanship or on exquisite refinements of line, surface and texture, very little of it will show even to ourselves and much less to our client whose temperament may perhaps be inclined to the display of wealth. He will at least prefer the visible appearance of his money's worth to an indiscernible rarity in the materials.

Then there is another tendency which we have to combat as well. It occurs in the opposite circumstances; that is, when a scarcity of means is combined with an ambitious programme. If, for instance, a large room has to be added to a house and only some hundreds of pounds are allotted for its execution, there will be a perceptible tendency to struggle against the quite adequate fulfilment of the material requirements in order to save every possible penny to spend on increasing the æsthetic value of the room. We might even be tempted to specify a cheaper roofing tile than we should in order to be able to afford a pleasant-looking radiator-case; or we might shorten the chimney flue at the risk of its inefficiency and thereby save the cost of half a rod of brickwork which we could expend on some elaboration of the cornice round the ceiling. But this is wrong. I am sure it is better for the owner of the house to discover—if he notices it—a slightly poverty-stricken appearance in the room

than a leaking roof or a constantly smoking chimney. Even if neither of these unfortunate inadequacies happen, we should not risk them. Our occupation is one which demands more than restraint and even sacrifice of our strongest wishes to give all the satisfaction it can to other people. But the influence of cost is the only one which can force us to this sacrifice. A lack of money means a simple beauty with efficiency in architecture; and the poverty of those we work for increases the obligation to ensure that efficiency, regardless of the degree of simplicity to which the beauty of the building is reduced.

That is, primarily, how the cost of building affects design, but as its influence operates very largely through the choice of materials—more even, I think, than through the arrangement of the shapes of the building which those materials give it—there comes in here for consideration the important point of the actual effect of material on design—a subject on which a rather exaggerated stress has been laid in recent years. We have even been told that all we have to do when designing a brick house is to make it look "bricky" and the design will be perfect. Or again, we are told that the Greeks chose marble for the Parthenon because they liked its limited structural possibilities. What is true, however, is that this material from Mount Pentelicon was the most suitable for the temple because it was

PLATE VI: THE PARTHENON

most available and was very durable; and as the Athenians painted the completed work all over in vivid colours, we can truly add that it had no value for them for its brilliant texture or its shining creaminess. We might, therefore, almost assume that it was chosen for practical reasons. But, as the tensile strength of pentelic marble was comparatively weak and as the limit in the length of a beam was about a dozen feet, it was only possible to space the columns of the temple about a dozen feet apart. Yet, as the material was relatively cheap, a large number of columns were not only very sensibly employed but their very closeness and bulkiness prompted those exquisite subtleties in spacing, in entasis and in the invisible curvature of supposedly straight lines at which succeeding generations have ever marvelled. I cannot believe that the architects of the Parthenon did not know of the arch and its possible uses in construction: it is quite conceivable to me that they did even consider it but that having reached such a degree of perfection in a trabeated construction they were tempted to attain the highest possible delight which that method could offer when this—their greatest opportunity—was presented to them. We cannot perhaps understand now such self-imposed restraint, but we may contemplate the thought that any arrangement of a series of arches running round the Parthenon would have an appearance of less splendid gravity than that so appropriately

given by the simple imposition of horizontal beams on columns.

Now consider again in modern work how materials affect design and cost guides their selection. For if the temperament of a man about to build a house urges him to insist on gables rising through the eaves on every side, we endeavour to make these features pleasant-looking by frolicking their sides in the Jacobean manner or by steepening the angle of their pitch. In the latter case the whole roof will become very prominent, hence our choice for its covering will be tiles of a good colour and texture, if they can be bought and hung within the stipulated cost of the house. If they cannot, we may obtain rough stone slates from Sussex or green ones from Westmoreland, and these will probably be cheaper. But a light green will clash with the bright red of the brick walls with terrible discordancy. So we offer to stucco the walls and colour them harmoniously. But this may offend our client because he has a disposition to believe in " truth " in architecture and the sinfulness of shams. So, either the gables have to be abandoned or the extra cost of expensive tiles incurred or—as a last resource—another architect must be found who is less fussy about the angle of a gable or the colour of a wall.

Nevertheless the employment of the most suitable known material in the position where it is most justly fixed—if we can afford the price—

is one of the great assets of architecture. Its very quality will enlighten the beauty of a building and its nature will enhance the significance of composition. For that marble of the Parthenon now seems to us the most suitable in the world for such an edifice: the very limitations it imposed bred the vitality of line which its tough sharpness encouraged, to the intense delight of the trained eyes of an artistic race. They knew how to select a material at a cost in due relation to the purpose of their building; armed with great wealth, they knew how to resist its temptation to exuberance, and having accepted the influence of the material on their design, they knew exactly how to check its power and, as well, how to glorify its possibilities.

IV

Let us infer, then, from the above the following three things: firstly, the adjustment of the two elements of architecture is completely controlled by the cost of its execution; secondly, that adjustment is made under the strong influence of the object for which the building is being put up, and thirdly, that the intensity of the beauty—the richness of the æsthetic value—is regulated both by the position of the work in the general scale of utility and, in a lesser degree, by the temperament of those we work for. We aim at a perfect fulfilment of the material requirements within the stipulated price and, in giving it, we try to

present an appearance of harmonious unity in the dominant aspect of the building and in its minor aspects too, both internal and external. We endeavour also to instil into that appearance a significance which is proper to the edifice and sympathetic with the owner's disposition. But the degree of intricacy in that harmonious unity and, relatively, the strength of that significance is a matter of variation which is settled in every individual work partly by our assessment of its utility value and partly—but more decisively—by the available funds. It is the intensity of beauty which fluctuates. It is the elaboration of its machinery and the working of it at excessive speed which makes the difference between magnificent richness and a demurely pleasant look. As we noted in the two degrees of intricacy in the front and side of the Loggia Bernarda, it is not the difference between the presence and the absence of beauty but it is the distinction between gentle and forceful harmonious unity—the glow and the flame of beauty—which concerns us. For the back entrance of an office in Aberdeen might be built of three pieces of granite—two jambs and a lintel—and the shape of the opening thereby formed might satisfy us perfectly and give us quite enough æsthetic pleasure as we hurry through it; but the door of a big French church, built in the fourteenth century, though not actually very much larger as an aperture for ingress might be formed in a hundred stones laid

in receding, carved, concentric arches without exhausting our pleasure in its contemplation as we advanced towards it, singing, in a slow and halting procession.

The first of these is high in the utility scale and has to be cheap: the second is lower in that scale and is understood to be expensive. The back door of a house, unlike the front door of a church, is a part of a building which is made more use of, though it is seen less, perhaps, than any other. It is probably the most practical item in the whole fabric, it can only be of a more or less standard width and height, and it is expected to do nothing more than provide an efficient entrance and exit for people nearly always in a hurry and often in the dark. In my opinion, then, any elaboration made in the arrangement of the lines of its sides and head, purely for the æsthetic pleasure of it, would be entirely wasted; and, as well, the point of view which demands that it should be made "beautiful" is a mistaken one. For this is an architectural detail near the top of the scale of utility, and it only counts as an object to be looked at in the artistic way when it appears as the outline of a void, the shape of which is satisfying in its proportion.

It may be a little ridiculous to write so solemnly about such a dull thing; but, unfortunately for those who think of architecture only in relation to stained glass and font-covers or Corinthian capitals and Louis XVI. chairs, a back

door of a stone house in a drab street of a northern provincial town is as much an object of architecture as the lantern of Ely or the baldacchino in St. Peter's. We live in a period, too, when countless buildings are wanted for plain people to inhabit and do ordinary things in; and our design of them constitutes the bulk of our work. If the whole nation became artists—in the broadest sense—and we all had, as well, automatically comfortable incomes, it is most likely that the demand for beauty in our material surroundings would be vastly increased. Then the scale of utility for buildings would still exist, but the machinery of the beauty possible to discover in all the items in it would become more and more powerful and intricate. It would be tended by the universal interest and constantly oiled by the pervading wealth. Yet even if that is quite impossible in the modern world and our architecture can only be as good as it is allowed to be; and if the modern standard of its excellence is a low one—taking its whole scope into consideration, our work will be successful if it reaches that standard. And if, happily, it actually raises it a little, we shall have done well in our careers.

So this adjustment of the practical matter with the æsthetic affair is made with those two elements in their due relation when it is in accordance both with the place of the building in the general scale of utility and with the temperament of those for whom the design is

made, and when, as well, the cost of it does not exceed the price proposed to be paid. Assuming that the material requirements are quite adequately met and that the maximum æsthetic value has been obtained from the arrangement of the lines made in a building to meet those requirements, the architecture will have the foundations of success if the two elements of its compound substance are in that relation.

CHAPTER SIX

STYLES OF ARCHITECTURE

I

STYLES of architecture might be described as variations on this theme. The various ways in which the lines of building have ever been handled are the causes of those differences between the architectural works of one nation and another and between one period and another. So that, if we look at our subject now in a more objective way and regard it in that speculative manner which I have pointed out is the second of the three methods of seeing things, we may discover from a scrutiny of its more notable works an illustration of my argument.

An architectural style might be defined, I think, as a crystallization at one time and in one region of the compound of the two elements of architecture under the emphatic dominance of a single idea or motive which affects its ingredients. The blend of the two is governed and has always been governed by the nature of the object of a building, by the disposition of its owner and by its cost—

always, though in varying degrees; but the relative power of the two elements has constantly changed and, we shall find, there is a fluctuation in the strength of the æsthetic element in relation to the utility factor between style and style just as there is between building and building of the same period and place. That is, we shall discover a *general* tendency sometimes to an emphasis on the practical element and a *general* tendency sometimes to an emphasis on the æsthetic element, because, of course, races—like individuals—have a general disposition, a certain common denominator of thought on the place of art in their lives; and races—unlike individuals—produce styles of architecture. Design is the expression of the practical and the artistic factors in combination: a design then can only be properly criticized when its place in history and its geographical position have been justly appreciated. To gauge the quality of a style, therefore, we must consider the historical and geographical limitations imposed on it; and I say limitations purposely because, firstly, a style is restricted to a certain adjustment of the two elements of architecture within a certain *scope*—a certain field for the action of that special adjustment and no more. Let us consider that now.

It is unnecessary and it would be a little absurd to embrace in a survey for this purpose the architecture of the whole world. We may safely omit from it the prehistoric works of man

and the exposition will not lose much value if we disregard the buildings of the Far East; nor need I mention the Buddhist, the Dravidian, the Saracenic, the Arabian or the Turkish achievements, or the monuments of the Aztecs and Peruvians. In fact it will be much better to study only that architecture which was evolved during the last three thousand years in all those regions which lie between Egypt and the west of Europe generally and, as well, across the Atlantic in parts of North America. My reader is probably learned in the history of our subject, and aware of the general trend of its development from—let us say—the Temple of Philæ to the Woolworth building in New York. Its line is usually followed from Egypt to Greece, then to Rome, then back to Byzantium and Asia Minor. We have the Egyptian style, the Greek style, and the Roman and the Byzantine: but after that, as the Dark Ages evaporate, the accepted historical development of architecture becomes less strictly local: it assumes a character and a name like "Romanesque" or "Gothic", which we associate more with a manner of building that pervaded the centre and west of Europe than with the architecture of one town or small territory. Similarly when the revival of learning began in the fifteenth century another manner of building, generically described as the Renaissance style, arose and submerged its predecessor with a gradual extension. And again, though it would

be inaccurate to say that this development was ever obliterated by still another in the way in which it had itself previously ousted Gothic, we might say with some truth that the difference between an American twenty-story building in the "Renaissance" style and a Florentine palace of the early fifteenth century is, on the whole, as wide as the difference between the Banqueting House in Whitehall and the lamented Cloth Hall at Ypres. Let us observe, then, the variations in the scope of these styles of architecture and note the tendency of the length of the scale of utility to increase as civilization goes on and adds to its complexity.

Now when we think of Egypt, temples occur to us—temples and a few palaces rather like temples, many tombs, some pyramids and the Sphinx. It is very nearly all religious building with a heavy and forbidding character. Art—we are told—is, so far as the particular race which creates it is concerned, a kind of answer to the question how to live. But it seems that Egyptian architecture was much more an answer to the question how to die: for most of its utility was directed to the provision of sepulchres and the dark shelter of rites associated with the tomb. Its scope, then, was limited to one important class of work and it is probable that design within that scope was checked still more by the prevailing discouragement an elaborate cult of death must induce.

Then when we think of Greece, temples occur to us again—but very different ones. For we are here already on one of the high pinnacles of architectural achievement and there are still those who maintain that the supremacy of the Athenian buildings of the fifth century B.C. over all others has never been shaken. And though the trabeated form of construction employed by Greek architects finds its derivation in Egyptian temple architecture, there is none of the sullen heaviness of its forbears in the later developments. The Greeks lived exquisitely and accepted death placidly; and their memorials, like the choragic monument of Lysicrates, added a kind of cheerfulness to their excellent beauty. Moreover, they built theatres as well; and if it seems that temples were still the chief concern of architecture and the just expression of its utility, and if it seems that the scope of our occupation in Greece at that period was still very limited, we must admit that it was wider than the Egyptian and—by the way—that the achievement within that scope was of much greater value.

Then advance six or seven hundred years and think of Rome in the second or third centuries of our era. No single class of buildings occurs to us at once, such is the multitude of the works of architecture and their variety. The scale of utility stretches from the construction of a drain to the building of a Pantheon to all the gods. It includes aqueducts, bridges, circuses, forums,

basilicas, palaces, houses and even shops, theatres, baths, temples and arches of triumph. None of them individually approach the perfection of the Parthenon and its startling lucidity as the complete expression of a national disposition, but all of them are notable for common sense, daring and gigantic construction and a kind of proud splendour without any sensitive refinement. The scope here is so great—the scale of utility is so long—that there was not the opportunity to develop one type of building to a more outstanding elegance than any other. So these mountains of structure piled themselves up until the earlier ones became quarries for the later and, at last, the Christian churches, copied feebly from the imperial basilicas, emerged and grew with rising strength among the vast carcases of Rome's increasing desolation.

Then, it seems, the scope of architecture was pointedly reduced. Our occupation became an adjunct of the Church. The wide humanism of the imperial period vanished with all its luxury and the opportunities for architects that luxury provided. Churches, however, multiplied and increased in size, though some of them were little more than collected fragments of the pagan edifices, ably fixed together—the one very great exception being Santa Sophia at Byzantium, that marvellous venture in construction which was based on the old Roman systems but went far beyond them. Then, after that, a real darkness

settled on European architecture, and, except for a brilliant flicker at Ravenna in the seventh century, the business appears to have ceased. Almost nothing was built: the scope of architecture was probably little more than the adaptation of deserted ruins into dwellings for those people who, in that black period, were sufficiently civilized to live in one place and resist the barbarian tendency to rush about in hordes.

About the eleventh century, however, there began to take place that astonishing period of church and cathedral building, the results of which still decorate and serve the spiritual wants of nearly every town in Europe which was then existing. Looked at in a purely professional way, we find the only other period comparable to this was the Egyptian. In both of them the scope of our work was limited almost entirely to the provision of temples—Christian and heathen—and very little else. Yet it seems that the older race built theirs in a gloomy and propitiatory spirit while the mediæval tribes of Europe, freed from the ponderous Roman yoke and full of Gothic vigour, raised their cathedrals as an act of real worship of God and His saints. Their enthusiasm fostered continual experiment and higher and more adventurous construction, so that, unlike the Egyptian temple architecture which developed very little during the three thousand years of its life, mediæval Catholic ecclesiastical architecture always strove for greater

and greater magnitude and splendour, until it exhausted all the possibilities of structure and every penny of the diocesan funds. Hence we might say that though its scope was limited, the opportunity to experiment with form and to do something more remarkable than anything yet achieved was very wide within the one class of work which, by itself, provided our whole occupation for nearly five hundred years.

After that, as we know, the zeal for church building was checked to some extent by the revival of learning. Men's minds turned to other things. It was found, for instance, that Rome was a storehouse of Antiquity as well as the headquarters of the Church. Moreover, a certain politeness returned to the world. It became less dangerous to walk about and intelligence was valued almost as much as military skill. All this was reflected of course in architecture. An increasing interest in this world as well as the next widened the scope of our work once more. Mere dwellings became houses and fortresses were slowly changed to palaces. Domestic architecture, in fact, really had its birth at that time. We still built churches in some of the Catholic countries, but we added to them great seminaries and stately residences for the hierarchy. Kings, too, ordered palaces to be built and noblemen competed in the erection of country seats with all their accessory buildings like stables, lodges, orangeries, chapels, bridges, breweries

and bakeries. Then the manor-houses arose and farm buildings took on a solid and comfortable appearance. Lastly, too, great institutions like the universities added to the mediæval cluster of their nucleus majestic colleges, great libraries and halls for academical functions.

Finally, the industrial age and democracy in the nineteenth and twentieth centuries. Here we have a field which is a little like the Roman in the breadth of the opportunity it offered architects. Yet its scope is much wider even than that; for there are those countless constructions —partly engineering works—which are connected with trade and manufacture, together with that great class of buildings which includes the housing, the care and the entertainment of the people. In fact, our field of action to-day is almost limitless. Nearly every month some new kind of building is demanded and it is not unusual for an architect to design a church one day, a hospital the next, reconstruct a private palace on a third, struggle with a station on a fourth and invent a hundred cottages on a fifth.

So it may be clear from this short note on a subject which Mr. Fergusson [1] took four large volumes to describe that these styles of architecture—these points in its development when a kind of crystallization is apparent—should be examined with a due appreciation of their relative scope. The Greek style was a narrow

[1] *The History of Architecture.*

one; so was the Gothic. The Roman style was broad; so is the modern one. In fact, the latter is so wide and undefined we can hardly see it at present. The Greek was distinctly a temple style and the Gothic was just as distinctly a church and cathedral style. But the Roman and the Renaissance and the modern are different: they are not derivatives of a single class of buildings: they are rather a character appertaining to a number of classes of buildings. They are all three styles of general utility rather than of a single employment. In the Roman, for instance, its quality is not discovered so much in the order of the portico of the Pantheon as in the massive arches and vaults and the practical magnificence of the plan of a building like the baths of Caracalla—a building in which these methods of construction were employed on a tremendous scale. The Roman style is a general character of bigness vested in splendour given to a whole range of quite different but very useful edifices.

There are therefore architectural styles of a narrow scope and others of a wide scope; and in saying that a style evolves itself at certain periods under the dominance of a single idea or motive, we must understand that the expression of that idea or motive need not necessarily appear in a single type of building but that it may diffuse a certain character, due to the temper of a people, over the whole extent of their architecture, however large that extent may be. That is, we find

in any style of any scope a general agreement as to the relation of the two elements in the architecture of all the buildings in it—a generally accepted and understood relation which exists irrespective of the adopted relation in individual works due to their position in the scale of utility. To-day, for instance, the unbending insistence on efficiency at any cost in *all* our buildings has created an accepted relation which stresses the practical element at the expense of the other much more severely than has ever been done before. That is indeed the one perfectly distinct quality of the modern style. Compare it with what the Greeks did. They were not satisfied with perfect efficiency and a modicum of beauty. If we consider the cost of their buildings and the care and skill lavished on them, it seems they have very little practical value after all. These temples *do* so little except shelter—rather draughtily—the statues of divinities. It may be irreverent to say so, but it occurs to a modern architect that this slight material object was made a kind of excuse for putting up buildings of immense æsthetic value and that, perhaps, the very beauty of them inspired those who beheld them more than the attributes of the deity they enshrined. And that kind of thing would be quite impossible in modern Europe, especially in Britain. Even our memorials are more popular if they serve some useful purpose; and most structures with an ornamental rather than a material object can only

be tolerated if they perpetuate the memory of a person or an event. If a building is perfectly efficient, it *may* be beautiful as well, but only if there is no extra expense involved. We do not much mind in any case. The Greeks, on the other hand, cared intensely.

It has occurred to me also that the architecture of early and mediæval Christianity—that is, what is included under the heading of Gothic—was evolved under the influence of an attitude of mind rather similar to ours to-day. Though its scope was as limited as ours is vast, and though the purpose of its buildings was of the loftiest nature, it is my firm belief that their primary aim was always one of stern utility. Just as we are struggling with steel and concrete for a hundred material purposes, they struggled with stone for the single purpose of sheltering large congregations. The intelligent construction of permanent roofs over altars and worshipping crowds was the sole demand made on architecture for several centuries. That this demand, however, repeated in every town and village in Europe, was almost immediately seized upon by architects as an opportunity for the display of skilful design—and that beauty almost at once appeared—was due to our unquenchable thirst for chances to produce architecture of æsthetic as well as of practical value, even if both values were not definitely asked for at the beginning. The beauty of Gothic architecture grew perhaps almost unconsciously

through long practice in the creation of one thing. Secretly encouraged probably by those who developed it, its æsthetic value was an inevitable organic result of incessant opportunity more than an expression of the deliberate wishes of those who—in the later centuries—discovered it and were at last proud to possess it in their towns. Buildings were then valued for their appearance; and this new appreciation was helped by the revival of learning and its interest in classical antiquity. Then, indeed, in the early Renaissance period in Italy there were times when the attitude of men towards architecture approached once more that of the Greeks. Even at the present time, too, there are still some survivors who maintain that attitude in face of the very much more general one which I have already indicated.

We may clearly infer, therefore, from the foregoing paragraphs that there is always at work on the adjustment of the two elements of architecture a broad influence from outside which deflects a little that relation between them due to the position of a building in the scale of utility from what seems obvious to one period to what was more compatible with the sentiment of another. It is an influence one way or another arising either from a general inclination to beauty or a general indifference to it balanced by a strong practical bias. The pendulum is always swinging and has gone on swinging since men began to arrange the lines of building. Though architects

of each succeeding period try to clutch and check it, shouting denouncements at the age before, they can hardly ever hinder even the inevitable sway of public taste.

II

An appreciation of the scope of a style is the first step to an understanding of its quality; and a grasp of the outside influence exerted on its formation by a nation or a race or even a group of people is the second step. That is, we try to discover all the classes of buildings which are included in the activities of one style, then we attempt to gauge the nature and the strength of the general tendency apparent in it towards a practical emphasis or an emphasis on beauty. If, firstly, the scope is somewhat similar to the scope of modern architecture, and if, secondly, the general tendency we discover in it has any resemblance at all to that which exists now, we are in a position to judge any individual building in that style from our point of view to-day to a certain extent. But, when either or both these suppositions are unfulfilled, criticism—in my opinion—is only sound when it is made on a building relatively to the scope of the style to which it belongs and relatively to the general attitude of mind of the people who created it for the following reason. We have already noticed that when the scope is small, the quality of the architecture of a style tends to be much higher

than when the scope is broad because, as we know, there was more opportunity to achieve perfection in one class of buildings than in a number. It was a matter of constant practice and popular encouragement. Twenty-three centuries ago, for instance, in Athens we designed very little but temples and always under the stimulus of a national delight in good work. Seventeen centuries later in France our opportunity came again to reach an almost equal height of achievement in the provision of great churches, again under the stimulus of local encouragement and with the blessing of a powerful Church. Such occasions as these two are crests of the waves of our progress—golden days in the career of a whole profession—but the results they gave are liable to put the products of our other periods at a dismal disadvantage.

Yet even if we were able to discover a style of architecture in the past which was the same as ours in both these important respects, we could only judge it by our standards to a certain extent because there is still another factor in what we might call the historical position of a class of buildings which must be borne in mind as well. It is the factor of tradition—the effect of the influence of what has been done before. This is, in a sense, a second limitation on the quality of architecture, because, firstly, if little or nothing has been done before, the restriction is obvious—there are no previous experiments in the solution

of a problem to guide us and the design has to be created from our inner consciousness; and, secondly, even if such fields for inspiration do exist, they may not be accessible and the restriction is the same. I cannot believe that any architect has ever been too proud to even glance at a solution by some one else of a problem he is faced with; and those who lived in periods which had access to the works of still earlier periods had this advantage that their designs escaped the natural limitation which the absence of the help of previous successful architecture would impose on them. Hence the increasing weight of tradition and—with the rise of the various amenities of civilization—the increasing accessibility of buildings of all times and all countries are important considerations.

History offers many instances at once. To begin with the Greeks had the whole output of three thousand years or so in Egyptian temple architecture to base their developments on. It was near them and, even in those days, easily accessible. Then the Romans, having conquered the whole world within their reach, sucked the intelligences of all their subject races. They were the greatest architectural borrowers in history and often plagiarists as well; for what they took never seemed quite assimilated, and some details of their buildings, filched usually from Hellenistic sources, looked like new patches on an old garment or even more like old patches on a new

garment. But, let us suppose that all traces of Greek architecture had been lost since then and that we had no knowledge of the sources of Roman inspiration, how much greater would be our admiration of the buildings of the later and more powerful race! We might have recognized —it is true—that what really constituted the style was an indigenous growth, but our approbation of its magnificent ornament would not have been tempered by the knowledge that it was a mere dress made out of scraps of Athenian finery in the mode of an earlier century.

This is why Santa Sophia is so wonderful. There were, it seems, some experiments made previously in church architecture of its type, but, relative to this great monument, they were quite timid works. Apart from its brilliantly developed construction, the use of marble and especially of mosaic surface decoration was practically an innovation on a great scale carried out with the highest success. It might even be said that this is a single building in which a whole style grew and blossomed and began immediately to wither. It was the first great independent attempt to cover a large congregation in a permanently glorious way. It was a perfectly distinct design when compared with those of the early Christians in Rome who copied loosely the plan but were unable to copy the massive construction of the imperial basilicas—buildings used for judicial and not for religious purposes. If we compare it, too,

with the Gothic achievement, we note that it took the mediæval architects four or five hundred years to arrive at the summits of Bourges and Chartres and Reims, the three which are its compeers. They and Santa Sophia have this in common, however: they have no predecessors in earlier periods—that is, they have no obvious descent outside the class of buildings to which they belong. But they are different in this: the French examples had a thousand direct ancestors within that class, some of which almost equalled them in merit, but the great Byzantine church sprang suddenly—through the genius of its creator and under the stimulus of Justinian's pious impulse—from a humble and undistinguished stock and stood alone, almost miraculously, a very noble parvenu.

This tradition—this influence of the style of earlier works on the design of any building of any period, such as it is, has sometimes an unfortunate way of reducing the value of the architecture of the building. There is an insidious tendency to borrow ideas and forms in a wholesale way, which both lessens the æsthetic value and reduces the adequacy of the fulfilment of the material requirements. For we find all through our historical period how the excitement of the discovery of a mine of ancient erudition floods a region or a country suddenly with adaptations of outworn idioms. They are revelled in for a short period on account of their newness and their

antiquarian interest, and any lack of æsthetic or practical value is disregarded. Look at the Roman loot of Greek forms—though the Latin common sense never allowed the tendency to carry them much too far. Look at the Renaissance rush for inspiration from old Rome and classical Antiquity and note all the curious growths and trimmings it produced in France in the reign of Francis I., and in England in the Tudor period. Look at the nineteenth century here when the discoveries on the Acropolis led to the Greek revival and men like Decimus Burton were happiest when they designed monuments of exquisite uselessness in the Athenian manner.[1] And again when the romantic movement rediscovered mediævalism and Gothic architecture assumed a false value based on morality and sentiment. And look at North America in recent (though not quite recent) years when all her borrowed plumes were never as gay or delightful as the quiet stateliness of her "colonial" dwellings. Then, lastly, look at us all now, with the whole architectural world and all its past within reach or described and photographed in books, can it be wondered at if the character of the modern style is a little indistinguishable? For there must be added to this vast field of possible inspiration from tradition and from other countries the complication of the great scope of our activity. Is it then so odd if we build a

[1] For instance, the screen at Hyde Park Corner.

cathedral in the Gothic spirit in Liverpool and one in the Byzantine manner in London? Or is it so curious to find a station in New York like an imperial Roman bath and one in Germany like a fourteenth-century cathedral inside out? Might we not venture to say that all such works are in the modern style when they adjust the æsthetic to the practical elements in a fundamentally similar relation—one in which the practical dominates and appears to dominate by the provision of beauty through severely perfect proportion, the apt relation of a very few lines, an economy of ornament and a richness only of related surfaces of a not too complex texture?

III

It seems that architecture has advanced in waves during the period at which we have glanced: it is clear, at least, that the length of the scale of utility increases as civilization slowly progresses and becomes more complicated. Yet it will be noticed that the upward curve of the widening scope is not a smooth one. There are, so to speak, deep drops in it followed by short horizontal runs at the lower level; and after these it begins to slope up again to a higher level than it was before it dipped. These are the waves, and the horizontal runs represent the relatively short periods in the three thousand years when a certain crystallization of ideas on life had been developed and men agreed to live in certain

regions in a certain way under a definitely formed ideal which dominated their actions.

But if we watch the progress of our development, this comfortable thought-diagram does not appear to be quite completely applicable: the analogy of simple waves is not enough. We might even venture to construct another metaphor to make a mental picture of the whole advance of architecture from the Theban kingdom to the present day. It would be one, I think, of a tide bursting through a narrow strait into a wide estuary and there being blown by a following wind in great billows along the main bed and up the twisting tributary creeks in smaller waves and ripples. For there have been only two real points in our whole survey when the tide came to a great pool and filled it to the placid surface of its highest banks before it overflowed and crept onward over rougher shallows higher up the channel of our activities. We find one at Athens in the Periclean age and the other, perhaps deeper and more translucent, in the Île de France in the thirteenth century, when Catholicism directed the whole of life. Those are the two pools in our course through the centuries—deeps where we still return to fish for inspiration—and as they filled, their waters percolated through all the little creeks and channels, meeting and combating other ripples of the tide and saturating even the whole field of our endeavour. Moreover, just as the sea—advancing up an estuary through the

marshes—suddenly goes quicker, then is checked by a bank of mud or a man-made bar, so has architecture advanced, sometimes accelerated by the rising demand for buildings, sometimes stopped and turned aside by natural events or by men's tumults and especially by war. And just as such an estuary in a plain throws out long and curving arms—great creeks and little rifts and ditches running inland with interminable intricacy and all filled slowly by the creeping sea—so does our development spread in an ever-widening scope, and follow long narrow lines of separate direction, each with their little pools of definite distinction and each, as it leaves the main channel in the distance, discovering its own obstacles of nature and its own rebuffs and hindrances.

The tumults made by men and all the artificial barriers put in the way of the placid evolution of our work are the results of racial disposition, animosities and the temper of a nation giving vent to them. They are the historical limitations imposed on it and affect the quality of a style by their restriction. We have sufficiently considered these already ; but the obstacles of nature are the geographical limitations and their effect is another restriction of a rather different kind.

Climate obviously comes first. Here is a limitation in the sense that all the classes of buildings, which come under the influence of one climate and appear either in one pronounced style

or in a number of related styles, have to submit to certain stipulations imposed on their design by the nature of that climate. Buildings in northern latitudes look naturally more severe than those in the sun-bathed south: they are in sympathy with the ferocity of the elements which have to be withstood—like Kirkwall Cathedral in Orkney, a very grim building when compared with the Cathedral of Orvieto, though it was put up at much the same time and for an exactly similar purpose. We might design, too, a racing stable—let us say—to be built in brick for the same man and at the same cost both at Newmarket and in Southern Egypt. There might even be exactly similar sites with access from the north and an open aspect to the south. The one in England might be the most admirable stable and at the same time give all the pleasure to the eye which could be possibly expected from a work of this class. Yet, if it was exactly reproduced in Southern Egypt, we should say at once that there was something wrong. We should notice a lack of sympathy with the climate and not sufficient emphasis on that kind of shelter which protects people and animals from an equatorial sun. We should want to modify it with flatter roofs, wider eaves, deeper porticoes, smaller windows and whiter—not redder—surfaces. We should augment all the practical appliances for resisting heat and, as well, make the building *look* cool and restful by eliminating any jerkiness of line and by

exaggerating its suavity. This is an obvious thing to wish to do; and it is almost a natural instinct to make a design sympathetic with its climate: I need not dwell longer on what is as natural as buying a tropical helmet for wear in the Sudan or furs for Labrador, though it is astonishing to find how often, both in the past and now, the guidance of the instinct has been disregarded. The Romans, for instance, always built in the Roman manner wherever they were. Possibly this was due to their inclination to militarism. We are doing much better at Delhi.

There is, however, a point which has a special bearing on architecture. It is in connection with the availability of materials which are suitable for building in the climates of those regions in which they are found. It is again a limitation on style through that influence of material on design which we have already noted, because, for example, we should hesitate to take pentelic marble to the west of Scotland from Greece, even if it was ten times more durable—in that climate—than the local stone. Hence architecture tends to develop the possibilities in construction of the material which is most available and cheap; and the results appear in separate places all over the world as minor styles—the little pools in the tributary channels of our progress, formed by the very obstacle of a natural limitation and wrought to a deep efficacy by the constantly repeated solution of a single problem. One of

them is found in that group of wooden "colonial" dwellings in the United States, where the material, following stone and marble forms, gave them a kind of tenuity and a new grace by translating them into a language of its own. Another is found in those Tudor houses of East Anglia which are built entirely of rubbed and moulded brick, again following stone forms but modifying them to the nature of their own material's substance; and still another might be discovered in that single group of buildings at Pisa—the Duomo and its surroundings. For here we have white Carrara marble treated as it expects to be treated with sharp and delicate carving and intricate and tiny coloured inlay. In all three of them we note how the very limitation of one material restricts the scope within the style and by doing so rarifies its quality.

Then there is another point in connection with geographical position which deserves some consideration. It is the question of space. It is a thing which is curiously unaffected by the importance of a building, for some of the most notable edifices in the world are cramped into quite inadequate spaces. This occurs especially in London where most of our first-class monuments are tucked into corners or buried in houses and offices. In the modern commercial world, too, the cost of land in large cities is so great and the competition to trade in a limited number of streets is so fierce, the matter of ground-area

becomes one of vital consequence. The result, of course, is height, checked in England by law, but unchecked in America by anything except structural possibility in steel and the new zoning regulations. Hence the startling effect of the commercial towers of New York, and the gradual evolution of a quite definite style arising from the dominant influence of this one limitation on what would be the ordinary modern adjustment of the two elements in architecture. Everything in the designs of these buildings comes under the emphasis of height: on the practical side, lifts are the chief item in their equipment and on the æsthetic side an appearance of extreme verticality —an upward rush in the look of their lines—is the proper and inevitable result. It does not seem to matter much if their details are adapted from Gothic or from Roman buildings, so long as the quantity of detail is well restrained and its exuberance repressed to that degree which is suitable to a building expected to be almost entirely efficient and very little else. It is just possible, however, that this style will develop in a way I suggested Gothic did and we may discover in it a new field for great æsthetic pleasure. Given the continued opportunity, American architects may create a style which will be ranked one day with the achievements of the thirteenth and fourteenth centuries in France. We might already describe it as one of the representative members of the conglomerate modern style;

and, returning to my metaphor, we might add that this high-building style is one of the principal channels into which the main bed of our estuary has split in modern times rather than a tributary creek which will cease, in time, to hold the waters of our exploits.

And the opposite to this vertical development is clearly that other subsidiary one we find best exemplified in the English country in all the long, low, straggling farm buildings and groups of barns and sheds and labourers' cottages. Here space is of no great value and even the direction of a wing of building seems to matter very little. We see in them all an emphasis of breadth and comfortable room. So their designs become horizontal and invariably low. Roofs are their dominant feature and much of the pleasure we get from them is due to the richness and the quiet significance of their harmonious colour.

CHAPTER SEVEN

THE HIGHEST QUALITY

I

THE beginning of this final chapter will take the form of an examination of a single building chosen from the whole field of architecture. I propose to analyse it from the point of view of our subject I have tried to present, and to apply to it the fabric of criticism which has been gradually evolved.

If my reader, therefore, will visualize the map of France, he will observe Bordeaux about two-thirds of the way to Spain on the coast of the Bay of Biscay. Then about a hundred miles north of that he will find the smaller port of La Rochelle, still a long way south of the Loire estuary and on the same latitude as Lyons and Milan. This town, which was once an important and prosperous place, is now a very quiet one and is remotely situated in Charente Inférieure. As you approach it slowly on a branch line from the east, you pass through flat country of an increasingly desolate character, and you finally

cross the drained marshes which used to surround the town and gave it that independent character for which it was noted in history. But it is better to come to La Rochelle by sea and approach it between the Iles de Ré and d'Oléron, then across the shallow waters of the gulf and through the passage guarded by the great mediæval towers at the entrance of the harbour basin. The quay is like a horseshoe with these towers for its ends; and the whole town surrounds it in a larger arc whose perimeter is fortified by white stone walls rising thickly from the stagnant water of an encircling dike. These bastions are the result of the siege of 1568, when most of the buildings in the town were demolished by the inhabitants to construct them; so that La Rochelle appears to-day practically as it was rebuilt in the seventeenth and eighteenth centuries. Hence there is a certain uniformity in its buildings and distinct evidence of a plan in the lay-out of the town. The harbour is its central feature, and the broad quay, shaded by trees, is backed by a row of tall and quietly pleasant houses. The actual town is between this screen of maritime buildings and the ramparts. It is a kind of belt intersected with straight streets radiating from the quay; and where they start from it their exit is marked by a gate—like those at York or any other mediæval town—but loftier and more elegant and finished in the case of the gate to the Rue du Palais with a delightful Ionic

pavilion sixty feet above the road and two bunches of baroque statuary supporting globes. Some of these streets on their course to the walls open out into square "places" in which the Cathedral and the Hôtel de Ville are situated; but most of the public buildings fall into line with the houses in the streets and all of them are uniformly arcaded, so that it is possible to walk about and shop and do one's business almost entirely under cover. The Rue du Palais is one of the principal thoroughfares and it is lined with important houses, business premises, the Palais de Justice and the Bourse—all of them regulated by the continuous arcade running through and many of them only three stories high. The Bourse, then, is the subject of our inquiry.

We might, I think, quite safely say that in the year 1746—when this building was erected—the French monarchy was the dominant factor in Europe. It found its zenith perhaps in the great reign of Louis XIV., but in the middle of the eighteenth century it was still stable and men believed in it, in spite of an almost incredible inequality between the upper and the lower classes. The business of kingship was deeply rooted and we must admit that if it sapped much of the life of a nation it produced some delightful flowers of art. About the time in which we are interested, however, the crystallization of life round the Court had appreciably lessened. On

the death of Louis XIV. people threw off the gloomy restraints which his declining years had imposed: they discovered other interests beyond the enjoyment of Court ceremonial. Hence there was a kind of diffusion of stateliness, and the stiff classicism of the architecture of the earlier reign was tempered, in the Regency, by a new elegance suitable to smaller rooms and the more intimate convivial gatherings of people in their own houses. Yet, even so, all the life of the country which counted was still courtly. The King was the pivot round which things revolved, though in a widened sphere; and if he was not the ideal which dominated men's thoughts, it was the monarchy more than anything which pervaded the whole country through the aristocracy. This, of course, produced a general style of architecture —the full classical manner evolved and adopted by the French in all their buildings roughly in the century between 1680 and 1780. They saw, as the Romans had seen, that no architecture provided a more magnificent frame for life than one based on the ordered design of Antiquity. They made it into the scenery of an exquisite existence, tempered to a certain extent to the exigencies of a more northern climate and adjusted with great taste to their practical requirements. Severe without, they rendered it amiable and very decorative within their buildings by a cloak of precious "boiserie", and the architects of the day found in this interior work their principal

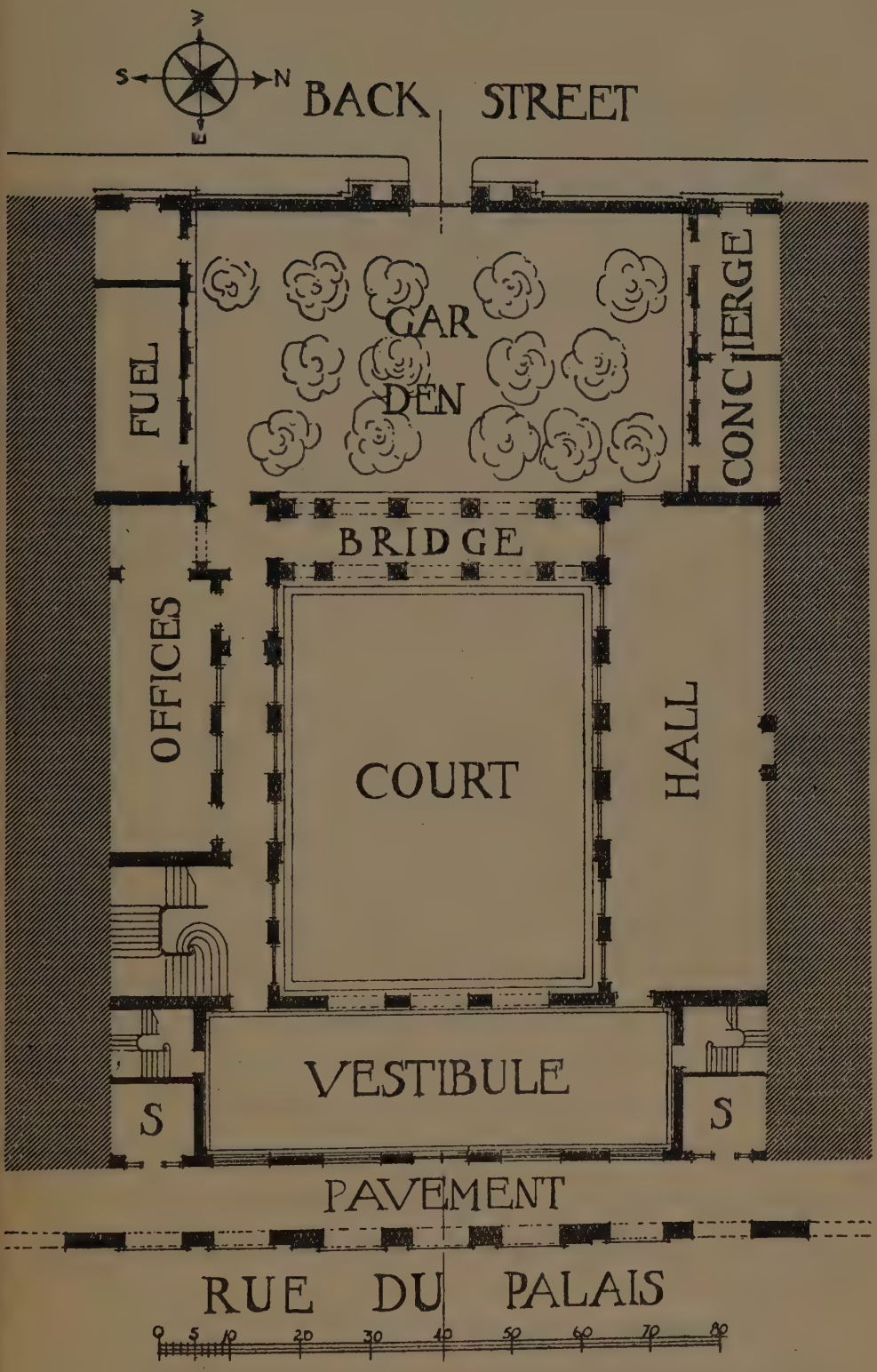
opportunity for play with form. We are enchanted with these rooms, yet we admire as much the intelligent design and the restrained beauty of the stone walls which enclosed them. Taken all together, this royal French architecture of about a hundred years was perhaps one of the great peaks in the whole range of our achievement.

Now in the second decade of the eighteenth century when, as I have said, there was a kind of diffusion of stateliness from the Court downwards, there was as well a spread—geographically—of the kind of design which the monarchy had inculcated. For not only did ministers and noblemen emulate Versailles in a smaller way, but there grew up in a large number of towns groups of public buildings and even houses for ordinary citizens which upheld faithfully—though with a dimmed splendour—the palatial quality of their type. Moreover, individual architects who had actually worked on the royal residences were put in charge of the erection of many of these provincial buildings; and among them was Jacques Jules Gabriel, who was made, in 1735, First Architect to the King. It was he who laid out, towards the end of his life, the quay at Bordeaux; also he—or his son—was responsible for the design of the Cathedral at La Rochelle; and as many of the public buildings and principal houses in the streets there resemble this church in character and detail, and among them the Bourse, we may safely conclude that our subject

was designed under the almost direct influence of the Court architecture, if not by some one in the King's architect's own entourage. Hence the merit of the arrangement of its lines, which I hope to display.

The material requirements of a Bourse or money-market in the eighteenth century in France could be reasonably described, perhaps, as the provision of a large room or Chamber of Commerce, which had to be approached in a dignified way and be connected with a number of smaller rooms and subsidiary offices for the transaction of business. A chapel was also stipulated as well as lodgings for a concierge. It seems, too, that all the rooms should be well-lit and easily reached from any part of the building, which was to be constructed of stone at a reasonable cost.

If the plan, which is shown opposite, be looked at upside down, it will be found to resemble to some extent that of the ordinary large French town house of the period, which was almost invariably disposed round three sides of a square of which the fourth was a high wall with a gate in it. But if the plan is looked at the right way up and is entered—as it should be—from the Rue du Palais, its arrangement presents quite a different aspect. To begin with, the actual Chamber of Commerce is on the first floor. It covers the whole area of the vestibule and that part of the arcaded pavement in front of it.


W
S
N
E
BACK STREET
FUEL
GAR
DEN
CONCIERGE
BRIDGE
OFFICES
COURT
HALL
VESTIBULE
S
S
PAVEMENT
RUE DU PALAIS
0 5 10 20 30 40 50 60 70 80

Hence the great staircase for access to this most important room. The Chamber and the two smaller apartments off it over the shops (S and S) rise almost to the roof inside, and in that part of the building the second floor is only a very low attic underneath the tiles. On the other hand the two wings on the north and south sides of the court, contain three floors of excellent rooms of different sizes and heights; and the fact that these wings are not extended to the back boundary of the site—in order, I imagine, to keep the building as condensed as possible—accounts for this piling up of apartments in their curtailed length. Besides, if they had been longer, it would have been necessary to reach the farthest offices, either through those which preceded them or by a passage like that on the south side of the ground floor which both subtracts much valuable space and partly destroys the light in the rooms beside it. It will be seen, however, that the difficulty of reaching—such as it is—the far ends of the wings is mitigated a little by the double colonnade across the end of the court which forms on the ground floor, a covered way between the wings and, on the first floor, a bridge with a quite distinct utility value because it allows people on that floor to go from one side of the building to the other without passing through the Chamber of Commerce.

Then if we look at the plan in a more completely architectural way, we observe a further

point in connection with the bridge. We notice, firstly, the exceedingly pleasant shape of the court, which is the chief feature of the plan. It is a rectangle the sides of which are almost exactly in the proportion of those parts of a line which is cut by the Golden Section I have previously referred to. It seems, therefore, neither too long nor too short and better than a square. Then we note how this effect would be much less apparent without the bridge and how the double colonnade —which is as high only as the ground floor of the wings—appears to complete the rectangle without quite enclosing it. We perceive its terminating function but we actually see beyond the graceful columns the thin stems of the plane trees rising still more gracefully from the dark shade of the gravelled garden. And there we have a good little instance of the real action of architecture—the seizing of a practical expedient to make it a delightful feature—the double thought expressed easily in one arrangement of lines—so easily, in fact, that it is difficult to decide whether the material requirement or the desire for beauty prompted the idea.

Even if this is a very pleasant arrangement to look at and almost shockingly so as we emerge from the vestibule into the court, it is not the dominant aspect of the Bourse which we should endeavour to trace. In doing this, then, we find there is a stately front to the building in the Rue du Palais, which is partly shown in Fig. 1 of

Plate VII. It is composed of a strongly rusticated base with a much higher wall above containing the windows of the Chamber. It is all extremely restrained and hardly differentiated at all from the adjoining buildings in the street except by an extra subtilty and elegance in its design. That, I think, is right; for the street is narrow and busy and few people *look at* this elevation of the money-market. But if we enter the gates in the middle of the vestibule, cross that and walk towards the colonnade, go through it and then turn round we are looking at that elevation shown in the middle of my Plate (Fig. 2)—the central front of the court which faces west. As we stand and look at it—which we can do quite safely and at ease in the oasis of the garden—this view strikes us as the dominant aspect of the Bourse; and though our vision is cut by the bridge, that elevation closing the vista of the court is clearly the climax in a design of notable value, one which has in it most of the constituents of first-rate architecture.

To begin with, we see a court—an open space dictated by the necessities of light and air. It supplies them adequately and admits them efficiently to the rooms on three sides of it behind the wall which cases them. This wall is continuously 43 feet high and of an altitude to protect adequately the rooms of a stipulated height within. Then, too, it is subdivided in height in a way which gives it very clearly a base

LA ROCHELLE THE BOURSE
ELEVATION TO THE RUE DU PALAIS 1/4 INCH SCALE
LA ROCHELLE THE BOURSE
END ELEVATION OF COURTYARD 1/4 INCH SCALE
LA ROCHELLE THE BOURSE
SIDE ELEVATION OF COURTYARD 1/4 INCH SCALE

PLATE VII: THE BOURSE, LA ROCHELLE

of 16 feet and an upper portion 27 feet high. The top of this base is marked by a strong horizontal band of stone with a delicate moulding on its underside, and it is this band which chains the whole design together; for it runs evenly round the three sides of the court and, as well, across the colonnade, where it forms a repressed but very effective cornice to the Doric order. Then on the *other* side of the *other* colonnade it reappears fully moulded and projecting farther, as a proper Doric cornice should, with triglyphs under it: so, finally, in this richer edition it is carried all round the boundaries of the garden formed by the concierge's house, the out-buildings opposite and the back wall of the street. These three are still only 16 feet in height and end in a balustrade above their cornice which runs across the bridge as well, on both its sides. Moreover, this base is everywhere pierced with almost uniform round-headed arches—those in the central front being perfectly plain and open, those in the two side walls of the court (Fig. 3, Plate VII.) being filled in with windows, and those which we find in the buildings of the garden being rusticated like the arches of the Rue du Palais front. And it would not be extravagant to suggest that this rustication in the garden is prompted by a desire for contrast with the smoother arches of the court and by a wish to emphasize the inner seclusion of that quiet stone place as opposed to the wilder and more natural

character of a garden. In any case, the arches appear consecutively in both and the 16-foot base runs round every wall, so that unity is maintained.

That is the main theme; and there grows out of it the superstructure of the three walls of the court with their two short returned ends looking into the garden. Figure 3 on the Plate shows the east end of the south wall as it starts from the angle: two of its three central arches are visible. It is possible that the architect may have thought this wall too long if it was unrelieved by a break; the seven bays in a row on a quite flat face would have been rather monotonous. It is possible too that there was actually a need for extra thickness in the centre part. But whatever was the reason, the wall is 73 feet long and the three central bays in it, 41 feet across, are brought forward exactly 4 inches. The happy result is that the principal wall of the court (Fig. 2) being 46 feet wide, remains the widest single surface and so retains its dominance over all the others. For there are nine elevations standing on the 16-foot base and all the same height—27 feet. That is, there are nine separate walls in the composition, all 43 feet high, namely: the two ends of the wings, 26 feet wide; the two centres of the wings, 41 feet wide; the four side pieces of the wings, each 16 feet wide; and the central wall, 46 feet in width. All of them are cut by a second continuous band of stone,

34 feet from the ground, like the band which finished the base; and this, with the simple continuous cornice at the eaves, chains the whole superstructure together.

Some of us might think, perhaps, that it would be sufficiently interesting to insert the windows in this 244 feet of wall in a perfectly uniform manner. But such an obvious thing to do did not satisfy the designer of the Bourse. He seems to have aimed at retaining the harmonious unity of the whole appearance, but he wished as well to give the principal elevation some kind of extra quality to emphasize its dominance without destroying its apparent uniformity with the rest. Note how he achieved this. Firstly, each of the three parts of the side walls of the court and their ends looking into the garden have windows arranged on their first and second floors in a quite similar manner. It is one in which the scale is so perfectly maintained and the proportions so evenly adjusted that it gives an effect of almost fixed stability. It would be impossible to discover any vitality in the whole of them from the cornice to the ground if the round arches of the base and the radiating bars of their glazing did not offer a slight suggestion of movement. The superstructure, in fact, appears to be perfectly still.

Yet, if we compare the principal elevation with this we observe that as its arches are not encumbered with window frames, and are quite plain and sharply set in the wall face, they suggest

a stronger vitality than the others: they seem to bound across the space with greater spring than the more domestic-looking openings beside them. Then we observe that the vertical panels in which the three windows of the Chamber of Commerce are placed break forward slightly twice on each side of each opening instead of once; and to add to this delicate distinction the actual openings are 9 or 10 inches higher than all the other windows in the court. Neither of these two adjustments is at once apparent, but both of them introduce an element of vitality to that front by a suggestion of upward-going movement—an inexact balance between the weights of the vertical and horizontal forces. Finally, the explosion of ornament high up over the centre window jerks the eye up; and the two ships' sterns carved in stone on the piers low down lead it to the earth. Both these, therefore, stretch the front vertically still more and with such force that equipollence is only regained by the two broad panels of low relief sculpture at the ends of the base, which seem to stretch the whole wall laterally and to form the two points at the base of a triangle with the carved trophy at the top for its apex. The triangle is equilateral and perfectly balanced, though within it there is an emphasis on verticality which gives to this admirable work just a slight touch of princely stateliness, which is the significance we expect to find in the arrangement of the lines of building which encloses a

Chamber of Commerce of the eighteenth century in France.

II

I suggest then that the architecture of the Bourse at La Rochelle is good. For we have here a building in which the material requirements—such as they were in that age so much less commercial than ours—are fairly adequately met. The dominant aspect of it, too, has very considerable æsthetic value. It is pleasant to look at, and it is pleasant in an appropriate way: that is, there is a just significance as well as a look of harmonious unity in its external appearance; and though I have barely mentioned them, the subsidiary aspects of the building will be found to have an excellence equal to the dominant one, and properly related to it. There is as much elegance in the doors and their ironmongery, for instance, as in the principal elevation to the court. I have not been able to discover whether the building was considered excessively expensive at the time of its erection, but I should guess that it was not so; for, compared with other buildings in the town of an equal public importance, the Bourse displays an almost peculiar simplicity and reticence. There are very few forms within or without which would require great expenditure for their execution; so many of its lines are perfectly straight and quite plain. In fact, it seems that those who built it placed it rather

higher in the scale of utility than we should expect them to. They appear to have thought of it as little more than a place of business which must have a certain look of decency and comeliness. It did not occur to them, I suppose, to make it look wealthy and lavish merely because monetary transactions took place within it; and if this was a didactic analysis, we of the present day might draw some profit from this lesson. But at that period the quality of the appearance of architecture was influenced much more strongly by the general taste of the day and less by the nature of the object of the building than it would be now; for there was, firstly, a much more powerful single influence in the monarchy and all it stood for than in the conglomeration of influences which direct our lives confusedly to-day; and secondly, the actual scope of architecture in the eighteenth century was considerably narrower than it is at present. Hence there was a closeness to type in all its works, a little irrespective of what they were; and, as I have said, there was a kind of general stateliness and a very high quality in taste in the typical works of the day; so to look merely decent and moderately comely postulated a higher level of artistic excellence than those terms would suggest to us. We might say then that the Bourse is not too restrained on the one hand or too exquisite on the other, when we take the above facts into consideration.

Again, the blend of the two elements of architecture is one which we may commend in this design, if we bear in mind its period. There are criticisms we could make, however. I admit, for example, that the necessity of crossing a vestibule diagonally, mounting a staircase and entering the Chamber of Commerce at one corner, is not an arrangement which we would consider wholly efficient now. It is too indirect. I admit, too, that the method of access to the subsidiary rooms is a trifle roundabout and inconvenient; but passages as we know them had hardly then been thought of, and in palaces even it was ordinary to walk through two or three rooms to reach a third. I admit also that it seems a little wasteful to give 7000 square feet out of the 13,000 of a valuable town site to the provision of light and air and open space; and lastly, I suppose it is odd to make a chapel out of a room adjoining a Chamber of Commerce—a room which might be so useful as a secretary's office. But all these drawbacks are explicable in the light of the eighteenth century in France. We must recollect the function of tradition. There had been much practice, that is, in the design of churches—eight hundred years or so; and there had been considerable practice, too, in the design of palaces. But very few *business* buildings had ever been put up before: hence the tendency of this one to adopt the form of another usage and to look more like a large town house for a

nobleman than a block of offices in Throgmorton Street. We must recollect also that neither convenience nor cost was counted then so much as now. What really mattered was dignity. Wealth was not the universal goal it became in the following century, but the struggle for worldly positions—however petty—with its pride in birth and power threw a shadow almost as dark over that period as the battle for wealth does now. Architecture, of course, faithfully reflected this by adding to its customary grace a touch sometimes of arrogance and often of unbending rigidity. It is this stiffness, then, this dignified, almost pompous neatness in the character of the building we have studied and have found otherwise so excellent, that I wish to draw attention to especially, because it introduces us to the decisive factor in the substance of architecture, the factor which makes our work not only good but—I venture to say—great.

III

My reader will perhaps recollect how I pointed out at the close of the discussion of significance, that the æsthetic element remained still not fully explored. What had yet to be touched upon—which is all I can do to it—was that quality in the appearance of beautiful things which gives us additional pleasure through its hint of mystery. It is not quite the same thing as richness of beauty: it differs from great variety in

unity and is not mere complexity of form. It is extra to them, and there is in it some implication of deliberate confusion—a *smudging* of what is clearly superb. It is analogous to the quality which we enjoy in a very brilliant sketch because the loveliness of its related forms is never quite seizable; and it is here doubly pleasant because we do not either immediately apprehend it or—when it has grown on us—can we ever quite grasp what is the scheme in the wisp of shapes which knits them with such ease and so enchantingly. We see, as it were, a figure of infinity and note a kind of boundlessness in its harmony which is yet perfect. The unity in it is clear but illimitable; and our delight is to trace it unsuccessfully to its confines. We like being mystified and the continual elusion aggravates deliciously a thirst which is never sated. Great works of art have this quality: you can sip them or you can glut the eye or the ear with their inexhaustible—because limitless—treasure.

What is the fascination in a ruin? I know they appeal to us for their antiquity and their historical associations; but, apart from these, why do we particularly like the appearance of some of them? For we all know one or two ruins which give us notable pleasure as things to rest the eye on. Think of Bodiam Castle, for example, standing in its moat in Sussex. As I recollect seeing it on a sunny afternoon, late in autumn, when there was a suspicion of mistiness in the

air and no wind, there was a quality in its appearance which I could not attribute quite to its design. That is, I saw a high wall with an irregular top standing in water, and in the wall occasional protuberances—square or round—with slits in them and broken tops. These towers and the wall itself were otherwise almost quite plain; and there was little arrangement of lines or forms in which one could discover a harmonious scheme, and, indeed, only from occasional points of view did the castle present a look of unity at all. Where it did so—and I found one of these points with the sun on the building—the pleasure of looking at it was great, partly, I suppose, because of its pearl-coloured stone seen against the trees and sky, but chiefly, I think, because of its air of unreality. The ruggedness of its material confused the level of its surface and jolted the eye very slightly with its countless different angles and facets all worn by centuries of weather. Though it looked impenetrable, it seemed to have a kind of surface transparency; and this was reflected in the water below, so that the base of the building was never exactly definite but was somewhere half-hidden in the thin line of a tiny ripple, at one moment pearl-coloured like the wall and, at the next, as blue as the sky it reflected or silver like a distant cloud. Also the top of the wall was a little indistinct. By that I mean it was clearly seen but, owing to the irregularity of the plan of the building and

the resulting advance and retreat of the lines in perspective, and owing to some of these lines being curved and others straight, and all a little broken or gently folded in a tuft of verdure, the exact form was not at once discernible. The eye fumbled for it and pursued its satisfaction through the soft intricacies caused by the crumbling of time, nature's storms and man's neglect. And the point is, we enjoy this pursuit for some deep reason of remote origin. The mystification which the eye surrenders to explains, I think, why we like looking at certain ruins and always want to make pictures of them, but are rarely able to, because this factor by itself is not enough to make them with.[1]

The charm of a ruin then is due to its natural irregularities. It is what the Italians in Titian's time discovered when they began to paint in masses what they saw. It was labelled "pittoresco" and we loosely talk of "picturesque" to-day. Art in painting began then to see this quality in things and added it delightedly to its own other qualities. It was only when objects with it in them were painted—much later on—in an unpicturesque way that we began to grow suspicious of the factor. But art in architecture, except when it has imitated ruins or deliberately confused its lines to the detriment of the utility

[1] The château of Pierrefonds may be compared unfavourably with Bodiam. Its restoration amounted to complete rebuilding by Viollet-le-Duc in his hardest mechanical manner. It has lost all the charm of age, though it possesses interest as an historical document.

of a building, has made use of it, in many periods, in a way which gave its works a subtilty and an alluring charm. It is only in the method of application that there have been differences of judgement and divergencies of view in the history of our occupation, and I must quickly mention them.

Firstly, there were those periods like the Middle Ages, when the actual workmen who put up the buildings were so practised in a single craft that the architect or whoever arranged the main lines and proportions of the works left in their hands the execution of repeated detail, so that we find in Gothic architecture a row of capitals perhaps of the same size but all slightly different in their elaboration; or a series of niches with hoods to them making the same emphasis of shadow but with different enrichment —either a touch of variation in their crockets and finials, whose foliage will look cut not quite the same in any pair and blown about by the breeze of fancy—or their corbels each sharply carved with separate tiny heads of animals or human beings, all very playful and related intimately in the scheme: so that all these crowded individual workings naturally confuse a little the general aspect of a building, however strict the discipline of their control may be.

Secondly, we find there has been at periods —the opposite of our own—a clear contempt for mechanical regularity. The Gothic builders

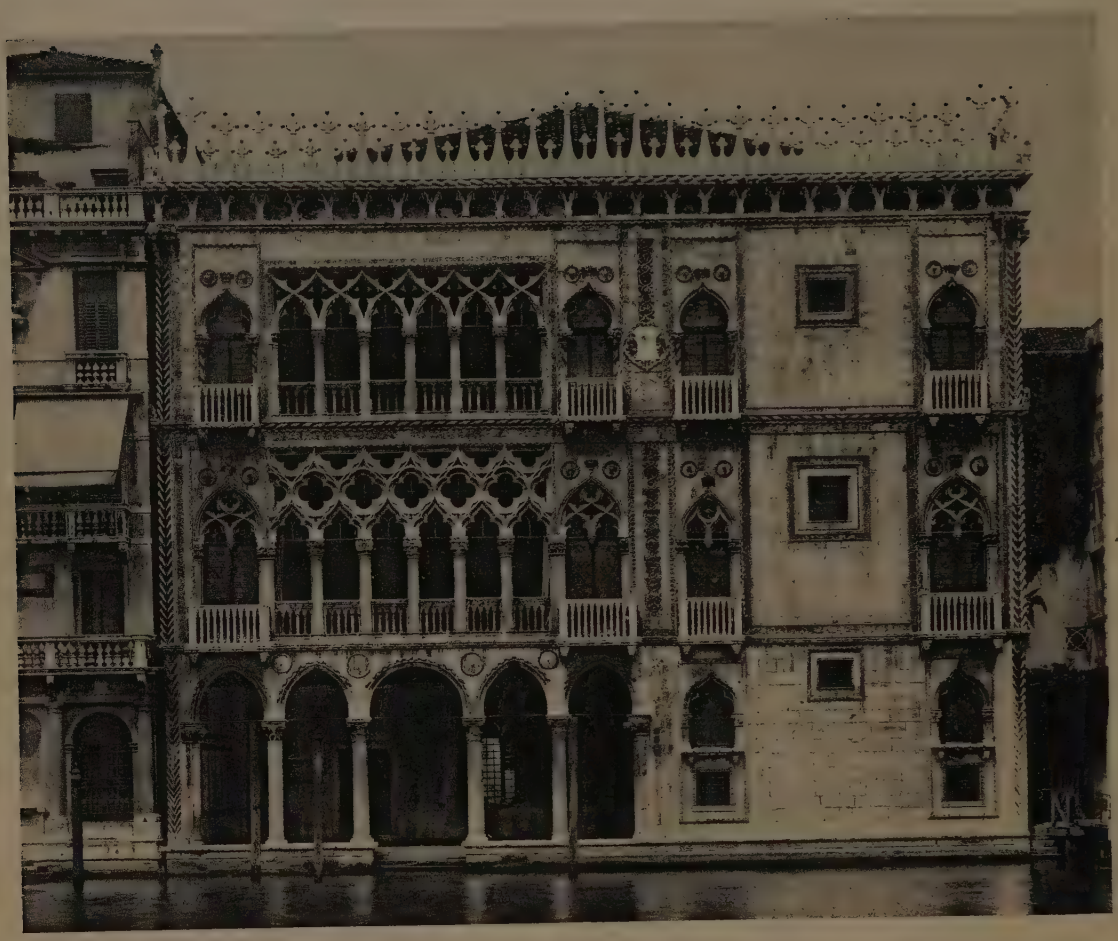


PLATE VIII: CA D'ORO

achieved mystery almost accidentally, but now and then, in their latest period, they seem to have aimed at it deliberately. Look at this photograph of the Ca d'Oro on the Grand Canal at Venice. It was built in the fourteenth century but has been so much restored as to be almost anomalous. Still we can trace in it a few instances of what I mean. There is its whole odd composition with the curious bi-section; yet there is very nearly a perfect balance and the larger intricate part is fused with pleasing subtilty into the plainer portion of the front. There are the gentle variations in that row of pinnacles on the cornice corresponding to the level balustrade of a Renaissance building. Note how there are three higher ones in the centre and two at each end, and as well, it seems, not *quite* perfect regularity in between. Then on the ground floor there are five arches of different form and slightly varying heights; and over the centre three of these there are six arches of exactly equal width, with, above them, a third tier spaced at intervals which are very slightly less than those below. Observe, too, the windows with their balconies. On the top floor there are four—at first sight just the same, but on closer scrutiny their execution is found to be a little different, for the two on the left are stronger than the others, the lines and mouldings of the arches are bolder, and their cusps are heavier and pierced. All four, however, have similar balconies with seven balusters, while

the four below are wider with nine balusters, except the third window, which shows the small balcony again and is itself much narrower than its neighbours and quite different in its tracery. Yet note how the two rings of carved inlay above the finial of this peculiar window are kept at the high level of the other rings to the windows of that floor and not in the relation to the apex of the arch adopted by the narrower windows of the upper rooms, which it resembles more. Thus the deliberate irregularity is partly reduced to order again and the rhythm of the whole design does not get lost but only a little perplexed; and it hardly loses any of its force.

It is highly probable, too, that few people ever notice these divergencies from mechanical precision; yet undoubtedly they were done on purpose and not through carelessness in design or execution. The result is that when we see the Ca d'Oro we feel a slight mystification in its appearance, which gives the arrangement of its lines a softness and charm analogous to that of a ruin. The actual building looks mellow with age, and the design of it—though not an exceptionally pleasant one—gives a certain depth of impression due to the slight difficulty of grasping it through the artfully confused ordering.

The artificial softening of the too sharp definition of architectural forms and sculpture is related to this deliberate irregularity in design. It achieves the same end—a certain indistinctness

and mystery. Polished modern terra-cotta buildings usually look stiff and lack charm because of their sharp and distinct edges. Every line on them is instantly clear. Stone, on the other hand, can be imperceptibly softened by rubbing after it is fixed, and—what is more valuable—it can be left quite rough from the tool, so that not only does the surface of the material retain a varied texture but the whole face of the building will look softly woven rather than tautly stretched and knitted. It is for exactly this reason that we prefer nearly always rough brickwork to smooth, and hand-made sand-faced tiles to shiny purple slates.

But these are elementary matters. What concerns us more is the deeper architectural treatment of the mystery factor which resides to a great extent in subtilty in the relation of planes, in their fineness of projection and recession and in the delicate confusion of their grading. The Ca d'Oro showed us rough irregularity in spacing, but this other matter is one which requires much nicer handling. Think of a building composed of a block with two wings: probably there will be a portico of high columns projecting in the centre and there will be shallower breaks forward in the middle of the wings reflecting it. When we stand in front and look at the whole cornice line, we see it in perspective with a number of horizontal lines at apparently different levels connected to each other by other lines jerking

sharply back and apparently downwards. It is the treatment of these sharp receding jolts which offers an instance of how a certain mystery can be added to an elevation. We aim at rendering them slightly less abrupt and blatantly distinct without detracting from the potency of their effect. There is now and has nearly always been a practical impediment to introducing such a modification on a large scale, but the later Renaissance architects tried to do it, I think, when they bent their fronts on plan and, by making them slightly convex, formed an obtuse angle at a break in plan and so reduced its square obviousness; or, where that was not possible, they stepped one plane back to another through short rounded surfaces placed on a diagonal axis at the corner. Yet they sometimes overstressed the curved treatment, so that their fronts lost the essential look of stability and seemed to wave and flutter like a flag.

Another instrument with which this factor can make great play is shadow. There is no more powerful way of adding to the depth of impression a building gives than the subtle handling of its shaded places. There is in the half-concealment of ornament with its suggestion of hidden delight an allure which, properly disposed, impregnates a composition with a wealth of mystery. A sudden mass of complexity in dark shadow, the suspected lights on the tiny points of beading underneath a cornice, or the gentle glow of

coloured enrichment in the cavern of an apse are instances.

Now at the Bourse there were none of these things. In all its spacings there is no sign of an irregularity. Every dimension which appears to be equal is exactly so. Every single angle in the building is precisely square and, in fact, all its lines are straight except the semicircular arches, the four lowest steps of the staircase, the slightly convex head of a door or two, the plan of the columns of the bridge and the intermingled wriggles of the applied ornament. There is no subtilty in shadow either except in the garden, where, by a happy accident, the leaves of the trees throw large spots of shade across the rustications of the base and so confuse its lines with a pleasant fluttering mysteriousness. This shows, I hope, how a design may be perhaps perfect in all the essential qualities but may lack just this one thing in its appearance which prevents its being too perfect-looking, too admirably correct and right, stiff, rigid and inhuman.

The Greeks, of course, knew more than any one how to make a building look perfect yet not obviously so. Those refinements which we know of now were made in the design of the Parthenon with just this object. To mention some of them: the gentle convex curve of the stylobate, the slight convexity in the line of the beam between the columns, the little discrepancy in the sizes of

the capitals and the spacing of the metopes, the variations in the spacing of the columns and in the diameter of the shafts, the entasis of the columns, and the leaning of the walls. Many of them, it is true, correct an optical illusion, but all of them do much more valuable work than that. They give the building vitality and infuse its stable forms with a look of enduring youth, but with such subtilty we are a little mystified as well as delighted, and thrilled by the depth of wonder.

IV

So, last of all, great architecture. It is indeed rash to even try to trace in words an approach to a definition of it. But, with due humility, I venture to suggest there is in its constitution a particle of something which is more than analogous to and really closely related to the factor of mystery in appearance we have just considered. It is another working of the factor and a much rarer one: an action on the very substance of architecture itself—that substance I have attempted to elucidate in all the preceding pages. For the adjustment of the two elements which is the pith of the matter and the focus of our occupation is affected occasionally in the hands of a master by something indefinable which gives the resulting work much more than mere success.

I have hinted in a long metaphor that our achievement is like a tide and that at various

periods there have been pools in its course, depths of work and evolution in a narrow sphere. They represent those times when one class of work only was demanded of us and we developed it almost to perfection ; and it is perhaps towards the end of such a period, when comparative mastery is more general than tentative experiment, that there appear the individual instances of superlative merit standing out from the others on account of an elusiveness—an unexpected quality in their charm—some mysterious tilt from the level line of sensible excellence.

Now there is a little pool, one of the lesser depths in the channels of our course, which not only national pride prompts me to mention. It is the modern English country-house architecture which, reviving forty years ago, had become gradually esteemed abroad and by the time of its extinction in 1914 had produced a certain nucleus of value. There was a general level of excellence in the larger houses, and there were several instances in the highest rank of merit. Among them is a comparatively little house at Knebworth in Hertfordshire.[1] It is low and square and settled-looking. Its roof, in parallel and intersecting ridges, forms gables on the north and east and west, but on the south it slopes down to a deeply shading eave, then farther down to shelter low loggias. The house always looks

[1] Holmwood, by Sir Edwin Lutyens, introduced here with his permission.

symmetrical outside and its squareness is appreciable from every angle. Yet it is a slightly confused squareness: the gables on three walls and the horizontal eaves on the other introduce an unevenness; so do the four little pavilions emphasizing the corners on the ground floor, and by their slight projection they complicate just a little the actual angles of the square. The complete symmetry of the plan is therefore imperfectly obvious though its harmonious unity is perfectly clear. Then, if you go inside, you enter a short tunnel-like passage through an arch in the centre of the north front. There is no door in the arch, so that you are still outside the house though well underneath the roof. That is a little unexpected. Also, it would be the obvious thing to discover a door at the end of the tunnel leading straight into the principal part of the house. But here it was found that such a door was much more useful practically if it led straight into the servants' quarters and towards the butler's pantry. Hence the actual front door of the house had to be elsewhere and you find it on your right at the end of the passage. This—very beautifully done—has an element of charm in it *because it is a little odd*: it is an unusual solution for greater effectiveness of an ordinary problem. It confuses us pleasantly. Then you enter the house, but still not with natural suddenness; for there is firstly a vestibule, quite small and square and perfectly symmetrical with four

similar doors in it opposite each other in pairs; and that which is *diagonally* opposite the one you have entered by leads at last into the hall, a large room with three windows to the west and with the stairs rising out of it through an arch on your left, first with five steps, then—after a hesitation on a short landing—with eleven more leading to the distant level of the upper rooms. And all this is curiously intriguing; I think because the house looks so square and simple outside but is just a little twisted and perverse within, though, in being so, it loses nothing in efficiency, but, on the contrary, provides a series of apartments—all different but suitably related and of an ample and delightful roominess.

That is a tiny instance of the kind of thing I mean by the action of this mysterious and indefinable factor on the very substance of architecture. Like the contempt for perfect mechanical regularity in appearance, there is in this deeper function a hint of scorn for ordinary success, a suspicion of a risk taken and overcome, with a touch of daring. It is, as it were, doing the thing a little crookedly and in a manner which is off the track of experience, so that—like the summit of a ruined wall—the main line of its direction is not immediately quite clear, but, for that very reason, we prefer it to a business-like solution. Bred of infinite pains, profound knowledge and very great experience, there is a kind of joyful feeling in the

mastery and control of an intricate and precious undertaking—a wish to play with it just a little, not in the clear safe light of successful brilliance, but in the hot twisting flare which genius engenders.

SUMMARY

ARCHITECTURE may be described as an occupation which substantially consists of the adjustment of two things to each other.

The actual occupation is the arrangement of the lines of building, on paper and in fact; and the adjustment works itself out through the final arrangement of the lines.

The two elements are the æsthetic—or the desire for beauty in appearance—and the practical —or the necessary fulfilment of certain material requirements.

Art is a pursuit in which skill is directed towards the production of beauty.

Beauty is æsthetic value in the appearance of objects. Though assumed to be subjective, the æsthetic value is due to a particular quality in the appearance of things which have always been considered beautiful.

This particular quality is one of harmonious unity.

The appreciation of this quality in buildings has an effect on us of tranquillity and repose; but this effect is variable, owing to the strength

of the vitality factor in relation to the stability factor in a design.

We apprehend both how masses seem to stand and how lines appear to go: weight and movement combine to create an impression of vital stability.

The quality of harmonious unity is most strongly apparent when there is a great number of balanced opposite masses and of balanced movements in conflicting directions, all related intricately in a unity of effect.

That within the mind which guides the arrangement of these masses, lines and movements is a sense of proportion.

Proportion relies on the maintenance of scale and affects the whole disposition of the parts of a building in all their relations: it is less a rule for relative lengths and areas than a general instinct which propels the machinery of beauty.

Harmonious unity is achieved, as in a strain of music, by repetition, balance and climax in a composition.

Yet the look of harmony in works of art is rarely quite plain: there are within the unity points of emphasis which give it significance.

We appreciate this significance when it is justly applicable to a building, and taste indicates the propriety of the character we attach to a design. Architectural forms, as instruments for the display of significance, may be classified according to their practical nature and origin.

Sculpture and colour are the two great auxiliaries of ordinary building forms in the addition of significance to an architectural composition.

The æsthetic element therefore consists of an appearance of beauty with a certain definite significance.

With this is fused the practical element, which consists of the adequate fulfilment of the requirements of strength, durability, shelter, light, warmth and salubrity.

The fusion of the two elements inevitably postulates some adjustment of their relative strengths, owing to the different positions of buildings in the general scale of utility.

This adjustment is influenced, as well, by the temperament of those for whom we work; and it is completely dominated by the cost of building.

Architecture is successful, then, if the blend of its two elements, made under the control of these three axioms, appears in an arrangement of lines which fulfils perfectly the material requirements and, as well, has an appearance of justly significant beauty.

All styles of architecture, including the modern, may be criticized on this basis; but judgement must be qualified always by an appreciation of the scope of the style, of the general attitude towards art of the race who produced it, of the weight of tradition influencing it, and of the geographical position of the buildings in which it is exemplified.

Ordinary success may be estimated thus, but a kind of obviousness may be discovered in the design: great architecture avoids that by adding lightly an element of mystery as well to the perfect coalition of the other two.

NOTE

It is obvious that I owe a considerable debt of gratitude to a number of writers on architecture, both living and dead. In fact, I have rather deliberately incorporated their thoughts in my essay with the object of correlating what so many have said in different ways on our subject. It has been my hope to present as a result a possible basis of thought which would satisfy them, the members of my profession, and such of the public as are interested. I can only register my gratitude in a general gesture and apologize for the intrusion.

I must acknowledge, too, great assistance from a circle of friends who have discussed and polished with me the presentation of various thoughts; particularly, Hubert Young and G. R. Routh. And, of course, Sir Edwin Lutyens, who, protesting at my placing him on the summit of a tower of argument, yet gave me his imprimatur. Others, like Mr. Augustine Birrell and my father, the late Professor A. S. Butler, provided an incentive to which I could do no less than endeavour to respond. Finally, I owe most to my publisher, whose very patient help made the appearance of this volume possible.

A. S. G. BUTLER.

INDEX

	PAGE
Adam, Robert	87, 174
Albert Memorial	15, 149
Amiens	137
Aristotle	58
Bacon	104
Banqueting Hall (Whitehall)	93
Basilica, Vicenza	60
Beauvais	113
Bodiam Castle	295
Bourges	167
Ca d'Oro, Venice	299
Calais	64
Callicrates	129
Cenotaph	39
Chartres	39
Cinemas	109
Cologne	87
Colosseum, Rome	225
Colour	138
Constantine, Arch of	228
Constitution Hill	221

PAGE

Cosmati 144
Cost of building 238
Crome 56
Cupboard, lines of 161

Decimus Burton 268
Delhi 273
Doors 111
Durability 188
Durham 39

Edinburgh, Waverley Station 35
Egypt 253
El Greco 24, 30, 52, 56, 102
Entrance Hall Columns 115
Exeter 144

Flying-buttresses 113
Fonthill 221
Forms, analysis of 108

Gabriel, J. J. 281
Genoa, palaces 164
Geographical restrictions 271
Goethe 62
Gothic building 256
Gothic section 166
Greece 254
Gwilt, Joseph 15

Hameln 134

	PAGE
Heidelberg	135
Hogarth	81
Holmwood, Knebworth	305
Horse Guards	38
Imitative function	55
Infinity factor	294
Kedleston	174
Keystones	112
Kirkwall	272
Kloster Melk	39
La Rochelle	277
Le Fanu	112
Light	200
Lincoln	120
Lines of building	158
Loggia Bernarda, Vicenza	91
Lund, Fredrik Macody	88
Marlow, the Thames at	103
Masai, dance of	72
Materials, influence of	242
Matterhorn	25
Mediterranean, house on	149
Michelangelo	59
Milan	71
Modern architecture	258
Mont St. Michel	35

PAGE

Musée Cluny 66, 75
Music, Theory of 73, 75

Newmarket, stable 272
New York 275
Nottingham station 124

Orvieto 272
Oxford, Radcliffe Library 37

Padua, St. Antony xiii
Park Lane, house in 40
Parthenon 50, 141, 243, 303
Périgueux, St. Front 184
Peruzzi, Baldassare 87
Picture-galleries 110
Pierrefonds 297
Pisa 36, 274
Plato 22, 89
Pont du Gard 223
Prettiness 233
Proportion 82
Pythagoras 89

Ravenna 256
Reims 81
Renaissance Architecture 257
Rhythm 71
Roman architecture 254
Ruskin, John 133

PAGE

Salubrity 208
Salute, Venice 31, 37
Santa Sophia 38, 194, 266
Scale 84
Scope of styles 259
Sculpture 126
Sectio Aurea 87
Shelter 191
Ships 216
Shop-fronts 117, 204
Significant form 104
Staël, Madame de 51
Stevens, Alfred 136
Stra 41
Strength 186
St. Paul's 20, 37, 118
St. Peter's 86
St. Regulus, Fife 191

Tiepolo, Giovanni 41, 150
Tower Bridge 120
Tradition 264
Truth 123
Tube-stations 222

Versailles 45
Victoria Street 26

Warmth 205
Westminster Abbey 42

PAGE

Westminster Cathedral xiv, 45
Westminster Hall 38
Wolseley building 42

York Minster 126
Yorkshire, illustration from 12, 18

THE END